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# A comparative study of the self concept and WISC patterns between Puerto Rican children taught in a bilingual program and those taught in a mainstream program : an exploratory investigation.

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A COMPARATIVE STUDY OF THE SELF CONCEPT AND WISC PATTERNS  
BETWEEN PUERTO RICAN CHILDREN TAUGHT IN A BILINGUAL  
PROGRAM AND THOSE TAUGHT IN A MAINSTREAM PROGRAM:  
AN EXPLORATORY INVESTIGATION

A Dissertation Presented

by

ROBERT L. BARCOME

Submitted to the Graduate School of the  
University of Massachusetts in partial fulfillment  
of the requirement for the degree of

DOCTOR OF EDUCATION

May 1989

School of Education

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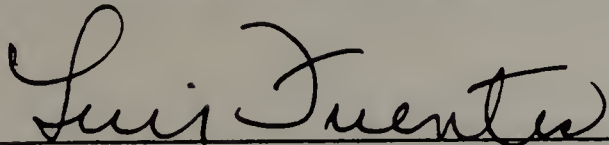
A COMPARATIVE STUDY OF THE SELF CONCEPT AND WISC PATTERNS  
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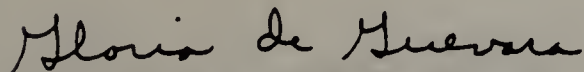
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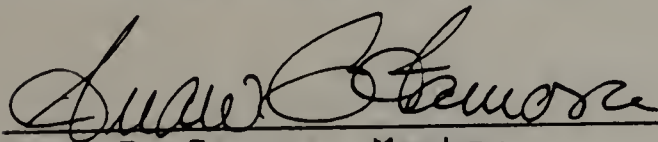
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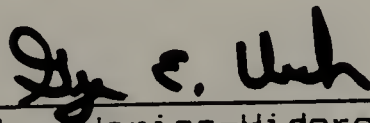
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- Robert L. Barcome

## ABSTRACT

# A COMPARATIVE STUDY OF THE SELF CONCEPT AND WISC PATTERNS BETWEEN PUERTO RICAN CHILDREN TAUGHT IN A BILINGUAL PROGRAM AND THOSE TAUGHT IN A MAINSTREAM PROGRAM: AN EXPLORATORY INVESTIGATION

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With increasing attention now being directed to the educational needs of bilingual children, more complete and careful evidence concerning the self concept and cognition in bilingual children is needed. Thus, the major purpose of this study was to compare the self concepts and WISC patterns of Puerto Rican children taught in a bilingual program and those taught in a mainstream program.

A total sample of 120 Puerto Rican children randomly drawn from the bilingual and mainstream elementary programs were involved in this study. Sixty children (20 from each grade level, three through five) from the bilingual program and sixty children (20 from each grade level, three through five) from the mainstream program served as subjects. The instruments used were the Spanish version of the Wechsler Intelligence Scale for Children (Escala de Inteligencia



Wechsler para Ninos) (EIWN) and a Spanish modified version of the Piers-Harris Children's Self Concept Scale (P-HCSCS).

These two groups were evaluated across twenty variables through thirty hypotheses. The intelligence variables were the Full-scale, Verbal, and Performance IQ's and the ten required subtest scores. The self concept variables were the total self concept scores and the six subscaled scores. A two-way analysis of variance was used to study the program, sex, and grade level differences found in the variables, and F tests were conducted. Means and standard deviations were computed to aid in explanation. Differences were analyzed through t-tests. Pearson product-moment correlations were also obtained between all variables. Subgroups analyzed consisted of the bilingual sample, the mainstream sample, grade levels three through five, all boys, and all girls.

The major findings were:

1. Monolingual children differed significantly from bilingual children on Full-Scale, Verbal, and Performance IQ's, with the latter group achieving higher scores on all three intelligence measures.
2. The self concept of monolingual children participating in bilingual educational programs appear to be no different than that of bilingual children participating in mainstream educational programs.
3. There were no significant differences between and within the sexes in the global scores of both studies.

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# CHAPTER I

## INTRODUCTION

The field of education and testing in relation to bilingual programs is still in its infancy, but is ready for and needful of rapid and rigorous growth. Bilingual instrumentation and its uses for pupil diagnosis, program evaluation, and empirical research must be improved intensively and extensively on a collaborative and committed basis if bilingual education is to move in a deserving direction.<sup>1</sup>

The message is clear. The crucial need to expand beyond traditional standardized instruments in the state of the art of bilingual/bicultural education (BBE) has been, and continues to be, well documented (Moran, 1974; Olgetree and Garcia, 1975; Oakland, 1977; Baca, 1980; Langdon, 1983). As is by now quite obvious, while the affective and cognitive needs of these children (children of Spanish-speaking background, in particular) has continued to demand, and thus to extend, relevant instrumentation for ascertaining these two areas largely has not. As a result, very little knowledge of either the affective or cognitive domains of Puerto Rican children exists in the school environs.

This study, therefore, will focus on two major areas: self-concept and intelligence, areas thoroughly investigated in psychology and eluded to in bilingual research.

---

<sup>1</sup> Perry A. Zirkel, "Evaluation and Testing in Bilingual Programs," in Hernan LaFontaine, Berry Persky, and Leonard H. Golubchick (Eds.), Bilingual Education (Wayne, N.J.: Avery Publishing, 1978), p. 374.

## Nature and Scope of the Study

There is now available an impressive array of existing literature that attests rather conclusively that the self-concept exerts a very powerful effect on the cognitive aspects of school performance (Brookover, Patterson, and Thomas, 1964; Newberg and Loue, 1982; Farley, 1982). Yet, while the literature (both conceptual and research) suggests rather strongly that these two domains both develop and manifest themselves in concert (Bradley and Caldwell, 1974; Bloom and Krathwohl, 1977; Gonzalez, 1978), both affective and cognitive research (as well as affective instrumentation) within the context of BBE have, in contrast, been neglected. Henderson (1980) (See Note 1), a bilingual advocate, verifies this problem as follows:

If scientific information concerning the specific nature of cognitive needs among culturally diverse groups of children served by the schools is something less than definitive, knowledge of conditions required to promote their social and emotional well-being is even less clear.<sup>2</sup>

---

<sup>2</sup> Ronald W. Henderson, "Social and Emotional Needs of Culturally Diverse Children," Exceptional Children, Vol. 46, No. 8 (May, 1980), p. 598.

Note 1. In this study, the terms "Hispanic," "Spanish-speaking," and "culturally diverse," as used by the author (and not necessarily in citations from other authorities) includes all language minority children who speak a language other than, but not necessarily to the exclusion of, English.

Indeed, since the enactment of the Federal Bilingual Education Act in 1968, there has been a growing consensus among bilingual theorists, who represent a wide spectrum of theoretical orientations and educational concerns, that both the affective and cognitive domains of Hispanic monolingual/bilingual children are neither well understood, nor solidly established by research (Law, 1977; Fishman, 1977; Myers and Goldstein, 1979; Mowder, 1980; Seidner, 1981; Osvando, 1983; Gay, 1983). That is, while global intelligence performance and some psychological variables have been of focal interest to some theorists, there has been few, if any, comparative studies related to the self-concept and no comparative in-depth studies that have used the Spanish WISC (Escala de Inteligencia Wechsler para Niños) (Roca, 1951) (an authorized Spanish-American adaptation of the Wechsler Intelligence Scale for Children) (Wechsler, 1951). As a result, there is surprisingly little hard data on bilingual children between first (L<sub>1</sub> bilingual) and second (L<sub>2</sub> mainstream) language learning environments, and even less on the tripartite relationships among bilingualism, self-concept, and intelligence.

Thus, to place in a better perspective the rationale of the present study, a brief review of a few existing viewpoints, which have not as yet been accorded sufficient attention by bilingual researchers, may serve as a convenient springboard and set the stage for the rest of the study.



In a critique of existing viewpoints Cordasco (1972), an eminent authority in this field, finds what may still be found in practically any of our large cities:

...In the major cities of the U.S. at the present time, it is the Spanish-speaking child (Mexican-American or Puerto Rican) who is the bilingual child, almost inevitably found in a context of poverty and reflecting a constellation of unmet myriad needs.

In commenting on the self-concept, he further observes:

In its efforts to assimilate all of its charges the American school assaulted (and in consequence very often destroyed) the cultural identity of the child; it forced him to leave his ancestral language at the schoolhouse door; it developed in the child a haunting ambivalence of language, of culture, of ethnicity, and of personal affirmation.<sup>3</sup>

And lest anyone fail to grasp the seriousness of these two indictments, Olgetree and Garcia (1975), also distinguished authorities, provide further clarification:

Those close to the problems of the education of the Spanish-speaking urban child feel that it is imperative that the school system respond to this crisis with greater effort than heretofore has been the case. It goes without saying that present programs are inadequate and fail to meet the increasing exigencies of the Spanish-speaking child.<sup>4</sup>

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<sup>3</sup> Francisco Cordasco, "The Challenge of the Non-English Speaking Child in American Schools," in William W. Brickman and Stanley S. Lehrer (Eds.), Education and the Many Faces of the Disadvantaged: Cultural and Historical Perspectives, (New York: John Wiley and Sons, 1972), pp. 120-121.

<sup>4</sup> Earl J. Olgetree and David Garcia, Education of the Spanish-Speaking Urban Child: A Book of Readings (Springfield, Ill.: Charles C. Thomas, Publisher, 1975), Introduction, p. xvii.

From still a different point of view, along with a narrower focus, a somewhat similar, pessimistic picture describes the measurement scene. Against this background, Baca and Cervantes (1984) reported, unequivocally, that:

[T]he issue of assessment is one filled with misconceptions, inconsistencies, and confusion coupled with considerable controversy. Add to this cultural, linguistic, and ethnic variables and one has the present state of affairs. The research clearly indicates that many assessment instruments are limited with respect to language minorities.<sup>5</sup>

As is well known in the literature, this quote accurately portrays the assessment/instrument scene of BBE of today.

In a similar vein, the foregoing is further exemplified by Troike (1978), after he emphatically pointed out, that after a decade, there is still not yet a systematic base on which to form generalizations in BBE. As stated by Troike:

Bilingual education is in critical need of research, both basic and operational, and unless it receives this support, this great experiment could just become another passing effort in the history of American education which has failed to achieve its goals—to the detriment of millions of school children and to our whole society.<sup>6</sup>

---

<sup>5</sup> Leonard M. Baca and Hermes T. Cervantes, The Bilingual Special Education Interface (St. Louis, Mo.: Times/Mirror Mosby, 1984), p. 162.

<sup>6</sup> Rudolph C. Troike, Research Evidence for the Effectiveness of Bilingual Education (Rosslyn, Va.: National Clearinghouse for Bilingual Education, 1978), p. 2.

The observations of Vasquez and Gold (1980), whose combined experiences embrace several years in BBE, should also not pass unnoticed. Commenting on the lack of research with minority children, their findings, well known to bilingual practitioners and psychometrists alike, are no less bitter. Their sentiments bear repetition in the present context:

Those who wish to learn more about minorities face two problems. The first is that not enough research is done on minorities in this country. The second is that what research has been done is often, for a variety of reasons, not readily available to the individual - whether graduate student, teacher, or college professor - who needs it.<sup>7</sup>

Without delving further into these brief critiques, the point should be fairly clear: many of the most basic questions relative to both the affective and cognitive domains among Hispanic children remain unanswered. Lacking also is information on the comparisons between monolingual pupils taught in bilingual programs, and bilingual pupils taught in mainstream programs. Further, it is yet to be clarified if differences in self-concept and/or cognitive measures exist between these two subgroups and how these differences relate to these two educational settings.

---

<sup>7</sup> James A. Vasquez and Clotilde Gold, Counseling and Minorities: A Bibliography (Rosslyn, Va.: National Clearinghouse for Bilingual Education and InterAmerica Research Associates, Inc., 1980), Forward, p. v.



Unfortunately, as of this date, few comparative studies are known, and those that exist have not been exclusively concerned with Hispanic Puerto Rican children. Although there has been a phenomenal growth of research on bilingualism (such as, linguistics, pedagogy, second language learning, to name just a few), the fact remains, no in-depth studies aimed at examining both the self-concept and Spanish WISC patterns among Hispanic Puerto Rican children have been performed to date.

Viewed from this perspective, then, this study addresses the weaknesses of the research literature in several intriguing and challenging areas. For example, with a specific focus on Hispanic "Puerto Rican" children, what are the affective and cognitive characteristics of monolingual and bilingual children identified for bilingual and mainstream education programs? Similarly, are there differences in self-concept and cognitive measures between these two subgroups? That is, when one explores the psycho-educational demands created by these two diverse (minority/majority and majority/minority) learning environments, would the self-concept and intelligence test scores of monolingual children taught in bilingual programs be significantly different from that of their bilingual counterparts taught in mainstream programs? Moreover, in light of the accumulating evidence that educators are now moving towards a de-emphasis of global IQ scores and non-categorical labels



to a more thorough analysis of the learning styles of these children (Sierra, 1973; Almonza and Mosley, 1980; Oakland, 1977), how would these two subgroups differ in regard to an in-depth analysis of their performance on the Spanish WISC? That is, in addition to the three major IQ scores (Verbal, Performance, and Full-Scale), how would these two subgroups differ in regard to each of the ten required subtests? Further, from the vantage point of subtest scatter, would significant differences be found among any of these subtests, and if so, in what direction, and of what magnitude? Also, would sex differences exist on any of the subtests? In addition, and of a special relevance to this study, would the relationship between self-concept and the various intelligence indices be relatively of the same variance between these two subgroups?

Clearly, these intriguing questions could be added ad infinitum, and some are yet to be formulated. Nevertheless, the observation stands: to the best knowledge of this researcher, who has conducted a rather extensive and exhaustive review of the bilingual literature, the topics at hand have not been investigated.

Therefore, the present study, conducted as two separate analyses, highlights two major areas in need of further investigation: self-concept and intelligence - two crucial areas thoroughly investigated in psychology and eluded to in bilingual research.

## Statement of the Problem

The purpose of this study was to comparatively examine, in greater detail than has previously been done, both the self-concepts and WISC patterns among a Hispanic subgroup that has largely been ignored by empirical researchers, namely, Puerto Rican children.

In a narrower perspective, this interdisciplinary study (exploratory and descriptive, in nature) was divided into two major objectives and four interrelated goals.

The major objective was to develop and initially validate a reliable self-concept instrument, less culture bound than existing tests, which could be used for measuring the self-concepts of Puerto Rican non-English-speaking children in bilingual/bicultural educational settings.

The second major objective (conducted as two separate analyses) was to comparatively investigate the magnitude of differences among the scores obtained from the Spanish modified version of the P-HCSCS (as developed herein) and among scores obtained from the Spanish WISC for a particular population, those identified as Hispanic Puerto Rican, and for two clearly delineated subgroups - monolingual pupils taught in a bilingual ( $L_1$ ) program and bilingual pupils taught in a mainstream ( $L_2$ ) program.

Supporting ancillary goals were two-fold: (1) to examine the corollary effects of sex, grades, and programs

on measures of self-concept and intelligence, and (2) to examine the relationships between these two major variables. More specifically, the two major studies may be described as follows:

### Study I

The primary goal of this investigation (the foci of the study) was to modify into the Spanish language an effective self-concept instrument, namely, the Piers-Harris Children's Self Concept Scale (P-HCSCS), for use in measuring the self-concepts of Puerto Rican children. Again, since there are no standardized affective instruments readily available for this particular ethnic group, the purpose of this study was four-fold: (1) to develop an objective self-concept instrument matched in the vernacular of this particular Spanish-speaking subgroup; (2) to provide an affective instrument to facilitate the assessment/diagnostic process with respect to these children for whom intervention may be needed; (3) to provide descriptive and normative data on the instrument for samples of monolingual and bilingual children; and (4) to help fill a badly needed instrumental gap in the current state of the art of BBE.

### Study II

The secondary goal of this investigation (the second most significant foci of the study), simply put, was to ascertain whether statistical significant differences existed between monolingual and bilingual children, boys and



girls, and educational settings (bilingual vs. mainstream) against the tests/instruments cited. In more specific terms, utilizing the Spanish version of the Wechsler Intelligence Scale for Children (WISC) and the Spanish modified version of the Piers-Harris Children's Self Concept Scale (P-HCSCS) the major goals of this study were three-fold: (1) to obtain comparative, descriptive information on the self-concepts and intelligence test measures between monolingual and bilingual children; and (2) to examine in-depth the interrelationships between these two dependent variables. Specifically, the three major analyses needed to fully explore the variables of interest in this study were as follows:

First, the intelligence study represented an attempt to replicate an earlier study by Altus (1953), an investigation that studied the WISC patterns between bilingual children of Mexican-descent and their monolingual non-Mexican peers, and to apply this methodology to study the Spanish WISC patterns of Puerto Rican children. The research objectives were:

(1) to replicate and extend the previous study of Altus (1953) by incorporating children from a different Hispanic subgroup; (2) to determine whether or not differences would be found among any of the Spanish WISC intelligence test measures (Verbal, Performance, and Full Scale IQ's, and scaled scores for the ten required subtests) between and within monolingual and bilingual pupils in bilingual and

mainstream educational programs; (3) to determine whether or not differences would be found among any of the basic descriptive variables (such as, sex, grades, and educational setting) on the measures previously cited; and (4) to provide in-depth intelligence data for Puerto Rican children for whom research in regard to subtest scatter (profile patterning) has been, and still is, nonexistent.

Second, the affective study (which employed the same research strategies as the intelligence study) represented an attempt to study in-depth the self-concepts between and within these two specific subgroups. The goals of this study were three-fold: (1) to replicate and extend the previous study of Altus (1953) by incorporating a second major variable, namely, self-concept; (2) to examine and compare monolingual and bilingual children's responses to the Spanish version of the P-HCSCS; and (3) to provide initial, descriptive, normative data, by sex, grades, and programs, for this particular Hispanic subgroup for whom research on the P-HCSCS has been, and still is, conspicuously absent.

Third, the final study (based on the two aforementioned data sets) sought to determine the relationships between the Spanish version the P-HCSCS and the Spanish WISC for these two subgroups of children. This study had two related objectives: (1) to examine the correlations between self-concept and intelligence; and (2) to examine the concurrent

validity of the P-HCSCS using the Spanish WISC as the criterion.

Viewed from this perspective, then, answers to the preceding analyses were sought to simultaneously generate some preliminary answers to the questions of whether differences in self-concept and intelligence performance exists between these two groups and what the sources of these differences are, should such differences exist. The questions posed in this research study were:

1. What cognitive differences would these children demonstrate in regard to the Full-Scale, Verbal, and Performance IQ's, as measured on the Spanish WISC?
2. What cognitive differences would these children demonstrate in regard to subtest analyses, when examined separately by sex and programs?
3. What affective differences could we find in regard to the total positive self-concept scores between groups when matched for sex and grades, as measured on the Spanish modified version of the P-HCSCS?
4. Will there be significant differences among the cluster scores of the six separate Factor Scales of the P-HCSCS between monolingual and bilingual children when they are grouped according to any combination of sex and programs?
5. Will there be significant relationships between the total positive self-concept scores and the three intelligence quotients between and within these two subgroups? Further, will significant relationships exist between the cluster scores of the six separate Factor Scales of the P-HCSCS and the three aforementioned intelligence measures?



## Hypotheses

The major hypotheses tested in this interdisciplinary study were derived from both self-concept and intelligence indices designed as dependent variables to be measured on random samples of Puerto Rican monolingual and bilingual children. In this comparative study, measurements were made of the self-concepts and intelligence indices on all children after they were further divided into two subgroups by educational programs on a random basis.

In this two-fold exploratory investigation, utilizing both the Spanish Wechsler Intelligence Scale for Children (WISC) and the Spanish modified version of the Piers-Harris Children's Self Concept Scale (P-HCSCS), each subject was evaluated to ascertain the comparative differences between and within each of the independent variables of sex, grades (three through five), and educational programs ( $L_1$  bilingual and  $L_2$  mainstream).

For this exploratory investigation, thirty hypotheses were designed to determine the statistical significance of the group differences between and within these two subpopulations. Specifically, the three main parts bearing on each of the hypotheses are the intelligence and self-concept measures, and the relationships between these two dependent variables. The presentation of the hypotheses for each of these parts will be considered separately.



The major hypothesis of the present study was that the two subgroups would differ significantly on both dimensions, and across all independent variables.

The hypotheses to be tested and stated in research form are as follows:

### Intelligence Measures

- H<sub>1</sub>: There is a statistically significant difference in the Full-Scale scores between the two subgroups of Spanish-speaking children among the grades and programs, measured by the Spanish version of the Wechsler Intelligence Scale for Children.
- H<sub>2</sub>: There is a statistically significant difference in the Full-Scale scores between sex of participants and the two educational programs, measured by the Spanish version of the Wechsler Intelligence Scale for Children.
- H<sub>3</sub>: There is a statistically significant difference in the Verbal Scaled scores between the two subgroups of Spanish-speaking children among the grades and programs, measured by the Spanish version of the Wechsler Intelligence Scale for Children.
- H<sub>4</sub>: There is a statistically significant difference in the Verbal Scaled scores between sex of participants and the two educational programs, measured by the Spanish version of the Wechsler Intelligence Scale for Children.
- H<sub>5</sub>: There is a statistically significant difference in the Performance Scaled scores between the two subgroups of Spanish-speaking children among the grades and programs, measured by the Spanish version of the Wechsler Intelligence Scale for Children.
- H<sub>6</sub>: There is a statistically significant difference in the Performance Scaled scores between sex of participants and the two educational programs, measured by the Spanish version of the Wechsler Intelligence Scale for Children.

### Subtests

- H<sub>7</sub>: There is a statistically significant difference in performance between both groups of pupils in the two educational programs among the ten required subtests, measured by the Spanish version of the Wechsler Intelligence Scale for Children.
- H<sub>8</sub>: There is a statistically significant difference in performance between both groups of boys in the two educational programs among the ten required subtests, measured by the Spanish version of the Wechsler Intelligence Scale for Children.
- H<sub>9</sub>: There is a statistically significant difference in performance between both groups of girls in the two educational programs among the ten required subtests, measured by the Spanish version of the Wechsler Intelligence Scale for Children.
- H<sub>10</sub>: There is a statistically significant difference in performance between third grade pupils in the two educational programs among the ten required subtests, measured by the Spanish version of the Wechsler Intelligence Scale for Children.
- H<sub>11</sub>: There is a statistically significant difference in performance between fourth grade pupils in the two educational programs among the ten required subtests, measured by the Spanish version of the Wechsler Intelligence Scale for Children.
- H<sub>12</sub>: There is a statistically significant difference in performance between fifth grade pupils in the two educational programs among the ten required subtests, measured by the Spanish version of the Wechsler Intelligence Scale for Children.

### Self-Concept Measures

- H<sub>13</sub>: There is a statistically significant difference in self-concept between the two subgroups of Spanish-speaking children among the grades and programs, measured by the Spanish version of the P-HCSCS.
- H<sub>14</sub>: There is a statistically significant difference in self-concept between sex of participants and the two educational programs, measured by the Spanish version of the P-HCSCS.

## Factor Scales

- H<sub>15</sub>: There is a statistically significant difference in self-concept among the six separate Factor Scales of the Spanish version of the P-HCSCS between the two subgroups of pupils in the two educational programs.
- H<sub>16</sub>: There is a statistically significant difference in self-concept among the six separate Factor Scales of the Spanish version of the P-HCSCS between third grade students in the two educational programs.
- H<sub>17</sub>: There is a statistically significant difference in self-concept among the six separate Factor Scales of the Spanish version of the P-HCSCS between fourth grade students in the two educational programs.
- H<sub>18</sub>: There is a statistically significant difference in self-concept among the six separate Factor Scales of the Spanish version of the P-HCSCS between fifth grade students in the two educational programs.
- H<sub>19</sub>: There is a statistically significant difference in self-concept among the six separate Factor Scales of the Spanish version of the P-HCSCS between boys and girls in the bilingual program.
- H<sub>20</sub>: There is a statistically significant difference in self-concept among the six separate Factor Scales of the Spanish version of the P-HCSCS between boys and girls in the mainstream program.
- H<sub>21</sub>: There is a statistically significant difference in self-concept among the six separate Factor Scales of the Spanish version of the P-HCSCS between the total sample of boys in the two educational programs.
- H<sub>22</sub>: There is a statistically significant difference in self-concept among the six separate Factor Scales of the Spanish version of the P-HCSCS between the total sample of girls in the two educational programs.



## Relationships

- H<sub>23</sub>: A statistically significant relationship will exist between the total positive self-concept scores of the Spanish modified version of the P-HCSCS and the three measures of intelligence quotients of the Spanish WISC among the pupils in the two educational programs.
- H<sub>24</sub>: A statistically significant relationship will exist between the total positive self-concept scores of the Spanish modified version of the P-HCSCS and the three measures of intelligence quotients of the Spanish WISC among the pupils in the bilingual program.
- H<sub>25</sub>: A statistically significant relationship will exist between the total positive self-concept scores of the Spanish modified version of the P-HCSCS and the three measures of intelligence quotients of the Spanish WISC among the pupils in the mainstream program.
- H<sub>26</sub>: A statistically significant relationship will exist between the total positive self-concept scores of the Spanish modified version of the P-HCSCS and the three measures of intelligence quotients of the Spanish WISC among the third grade pupils of both educational programs.
- H<sub>27</sub>: A statistically significant relationship will exist between the total positive self-concept scores of the Spanish modified version of the P-HCSCS and the three measures of intelligence quotients of the Spanish WISC among the fourth grade pupils of both educational programs.
- H<sub>28</sub>: A statistically significant relationship will exist between the total positive self-concept scores of the Spanish modified version of P-HCSCS and the three measures of intelligence quotients of the Spanish WISC among the fifth grade pupils of both educational programs.
- H<sub>29</sub>: A statistically significant relationship will exist between the total positive self-concept scores of the Spanish modified version of P-HCSCS and the three measures of intelligence quotients of the Spanish WISC among all boys in the two educational programs.



H<sub>30</sub>: A statistically significant relationship will exist between the total positive self-concept scores of the Spanish modified version of the P-HCSCS and the three measures of intelligence quotients of the Spanish WISC among all girls in the two educational programs.

### Assumptions

The assumption that the Spanish version of the Wechsler Intelligence Scale for Children (WISC) and the Spanish modified version of the Piers-Harris Children's Self Concept Scale (P-HCSCS) were valid and predictive measurement tools was accepted by the investigator. The study was also based on the assumption that the affective and cognitive levels of performance elicited by the two subgroups of Spanish-speaking children accurately reflected their underlying competencies.

### Definition of Terms

The following is a list of terms and their definitions which will be used in this study:

Affective Domain: An attitude dimension which refers to a person's evaluative feelings, moods, emotions, and temperments.

Mean: The mean is often referred to as the average, which is produced by the sum of a group of scores divided by the number of scores.

Bilingual: The term "bilingual" is used throughout this study to distinguish students who have a proficiency in speaking both Spanish and English. The term bilingual is not used to indicate equal ability in both languages.

Students who are bilingual are usually proficient in the language of origin and less proficient in the language of the dominant society, as in this study, the United States.

Bilingual/Bicultural Education (BBE): A program which uses the students' native language (e.g., Spanish) and cultural factors in teaching, maintaining, and further developing all the necessary skills in the students' native language and culture, while introducing, maintaining, and developing all the necessary skills in the second language and culture (e.g., English). The end result is a student who can function in both languages and cultures.

Concurrent Validity: Test results compared to a present or current performance on other criterion measures, which provides some immediate evidence of the usefulness of the test.

Correlation: The degree of relationship between two different factors; measured statistically by the correlation coefficient.

Correlation Coefficient (r): A statistic that describes in numbers ranging from -1 to +1 the degree of relationship between two different factors. The correlation coefficient in this study is known as the Pearson product-moment (r), and may be either positive or negative.

Diagnostic Test: The diagnostic process used in psychometric interpretation is designed to identify the quantitative and qualitative aspects of test results and to present a meaningful picture of children who may need further evaluation and/or educational intervention.

Intelligence: The definition of intelligence here proposed is the entire repertoire of acquired skills, knowledge, learning sets, and generalization tendencies considered intellectual in nature that are available at any one period of time (Humphreys, 1971). For the purpose of this study, however, intelligence is defined as a unitary disposition to solve problems as those measured by the Spanish version of the Wechsler Intelligence Scale for Children (WISC).

Intelligence Quotient (IQ): A numerical value assigned to an individual as a result of intelligence testing.

Mainstream: Provision of educational programs in a regular classroom setting with instructions in the English language.

Monolingual: A person who speaks only one language.

Phenomenology: The view that psychology and all other sciences should be ultimately based on a description of immediate experiences - that is, on the process of attending to and grasping phenomena as they are directly presented.

Performance Test: An intelligence test or part of an intelligence test that measures the individual's ability to perform such tasks as completing pictures, making designs, assembling objects, etc.



Self-Concept: A complex and dynamic system of beliefs which an individual holds true about himself (Purkey, 1970). For the purpose of this study, however, the self-concept refers to the way the child feels about him/herself, as measured by the Spanish modified version of the Piers-Harris Children's Self Concept Scale (P-HCSCS).

Standard Deviation: A measure of the variability or dispersion of a distribution of scores. Computation of the standard deviation is based upon the square of the deviation of each score from the mean. In other words, the more the scores cluster around the mean, the smaller the standard deviation. This statistic used in sampling provides an excellent measure of the scatter of the observations about the arithmetic mean of the distribution. In brief, the standard deviation takes into account each observation from the mean of the group.

t-test: A critical ratio expressing the relationship of some measure (mean, correlation coefficient difference, etc.) to its standard error. The size of this ratio is an indication of the significance of the measure.

Verbal Test: An intelligence test or part an intelligence test that measures the individual's ability to deal with verbal symbols; it may include items measuring vocabulary, general comprehension, mathematical reasoning, ability to find similarities, etc.



### Significance of the Study

The significance of this three-fold study can be viewed from several perspectives. First, in an attempt to study the self-concepts of Hispanic Puerto Rican children, the Piers-Harris Children's Self Concept Scale (P-HCSCS), a well-known, and widely utilized measure of self-concept, has been modified into the Spanish language of this particular Hispanic subgroup. Without question, this approach should provide not only a more relevant instrument which could be used within the parameters of the bilingual settings, but also an intriguing research tool which could be used by a broad variety of investigators and practitioners including educators, physicians and clinicians, as well as school psychologists. As Koppitz (1982) accurately reported:

Personality assessment of schoolchildren can serve at least four important functions: to determine the youngsters' behavioral and learning styles; to discover the pupils motives, attitudes, and modes of adjustment to school and schoolwork; to explore the children's self-concept and their ability to relate to others; and to find out whether the pupils show evidence of undue anxiety, serious emotional disturbance, or thought disorders that require referrals for further evaluations and therapeutic interventions.<sup>a</sup>

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<sup>a</sup> Elizabeth M. Koppitz, "Personality Assessment in the Schools," in Cecil R. Reynolds and Terry B. Gutkin (Eds.), The Handbook of School Psychology (New York: John Wiley and Sons, 1982), p. 273.

More pertinently, she went on to point out that:

Psychological evaluations of schoolchildren should include not only an assessment of their perceptual and cognitive functioning and their achievement, but also a study of their feelings, conflicts, motives and attitudes...<sup>9</sup>

Nevertheless, since a review of the testing literature failed to uncover a standardized instrument that would measure the variables of interest in this study, and since affective instruments like the P-HCSCS are frequently used in educational and clinical settings, the results of this preliminary study should have significant implications for those of us (school psychologists, clinical practitioners, and others) who have a special commitment in affective/intervention strategies with Puerto Rican children. Further, although this instrument has been translated into several languages (Piers, 1977), none of the previous research has been directed towards deriving an adapted Spanish version for this population.

This study, then, is significant in three "unique" ways. First, it contributes to an evaluation of the P-HCSCS for use with Puerto Rican non-English-speaking children. Second, it reports the development and preliminary normative data of such a scale, and third, it provides an approach to the diagnosis and remediation of the Puerto Rican self-

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<sup>9</sup> Ibid.

concept, be it for clinical, research, or educational purposes.

Second, this study differs from all previous studies in that it investigated statistically the self-perceptions of children within the "same" ethnic population, and between two clearly delineated groups, namely, monolingual and bilingual children. While the assessment of the self-concept has been expressed as a crucial goal within education in general (Chapman and Boersma, 1979; Stipek, 1981; Eschel and Klein, 1981; Parsons, 1982; Anderson and Anderson, 1982; Hughes and Frommer, 1982; Beane, 1982; Goh and Fuller, 1981; Argulewicz and Miller, 1985; McConaughy, 1985), and within BBE in particular (Rodriguez, 1968; Lopez, 1972; Aragon, 1973; Gallegos, Garner, and Rodriguez, 1980; Olgetree and Ramirez, 1980), a review of the relevant literature will reveal that no in-depth studies aimed at examining the self-perceptions of Puerto Rican children, between and within first, "L<sub>1</sub> bilingual" and second, "L<sub>2</sub> mainstream" language learning environments, have been performed to date. Moreover, as is well-known in the bilingual literature, with the noted exception of Hispanic Mexican-Americans subgroups, few Puerto Rican subgroups have been the focus of self-concept study. In fact, even the most highly competent group of bilingual researchers (Laosa, 1975; Bernal, 1977; Oakland, 1977; Fishman, 1977; Troike, 1978; Woodford, 1982; Wilig, 1982; Baca and Cervantes, 1984), each of whom is an



accomplished expert in one or more areas of multicultural education and many of whom are authoritative figures in the field of BBE, mention almost nothing about this particular Hispanic subgroup or this very important subject.

Given this framework, then, this study, admittedly an exploratory effort, is significant in several "unique" and challenging ways. First, it contributes to an evaluation of the P-HCSCS as an effective screening instrument for use with this particular Hispanic subgroup. Secondly, it provides a wealth of in-depth descriptive data on the self-concepts of Puerto Rican children (both between and within bilingual and mainstream educational programs), and thirdly, it provides an index of movement towards a normative reference. This study, thus, should be relevant to bilingual practitioners, bilingual school psychologists, and others interested in psychoeducational "affective" assessment. As Taber (1984) recently noted:

If meaningful and lasting improvements in public education are to be made, it will be necessary for educators to make full use of the affective domain. Failure to do so will severely hamper efforts to effect the fundamental changes and improvements in school programs that the public demands. The challenge to administrators at all levels will be to create opportunities for teachers to learn about and utilize the affective domain as they strive for educational excellence.<sup>10</sup>

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<sup>10</sup> Gary Davisson Taber, "The Affective Domain and a Nation at Risk," National Association of Secondary School Principals Bulletin, Vol. 68, No. 470 (March, 1984), p. 52.



Third, taking a different perspective, this study adds a number of new dimensions to previous intelligence studies in that it investigated, statistically, the individual subtest scores (profile patterns) between and within monolingual and bilingual children on the Spanish WISC.

Although the major significance of this research was to investigate a Hispanic subgroup that has been too frequently ignored by psychometric theorists, more significant goals were to expand on the previous research of singular psychometric indices (i.e., Verbal, Performance, and Full-Scale IQs), and to further examine the individual subtest scores between and within these two subgroups, and to explore strengths and weaknesses as well as scatter. Clearly, such a comparative analysis should provide not only a more meaningful picture of the inter-subtest variability between these two subgroups, but also a wealth of valuable psychometric data of pedagogical relevance. As Smith, et al., (1977) commented:

...Since its origination in 1949, the WISC has been subjected to more rigorous empirical investigations than any other standardized instrument commonly used in educational settings. In studies ranging from predictive validity to factorial analysis, the WISC has consistently demonstrated powerful psychometric properties. <sup>11</sup>

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<sup>11</sup> Monte D. Smith, et. al., "Recategorized WISC-R Scores of Learning Disabled Children," Journal of Learning Disabilities, Vol. 10, No. 7 (August/September, 1977), p. 48.

And they concluded on this note:

...In our search for useful diagnostic prescriptive instruments, the Wechsler scale must not be overlooked ...[i]t may be that far more information from the WISC and WISC-R (See Note 2) than is utilized is ignored, residing unobtrusively in the pattern of subtest scaled scores. (Note is mine)<sup>12</sup>

Similarly, Gilbert (1969) made this observation:

The advantages of the Wechsler are that its scores are statistically derived; its IQs are considered comparable through all age ranges; it yields a Performance as well as a Verbal IQ, which is fairer to those persons with less education; and the content of responses to the test are clinically revealing, both the response to individual items and pattern analysis.<sup>13</sup>

While many theorists have acknowledged the importance of profile analysis (Ferninden and Sherman, 1969; Bush and Mattson, 1973; Vance, Wallbrown and Blaha, 1978; Kaufman, 1979), most intelligence studies in the bilingual spectrum have been restricted to either global test scores (Verbal, Performance, and Full Scale IQs) or Hispanic Mexican-American samples (be they in L<sub>1</sub> or L<sub>2</sub>), and no study of subtest scatter utilizing Hispanic Puerto Rican children

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<sup>12</sup> Ibid., p. 52.

<sup>13</sup> Joseph Gilbert, Clinical Psychological Tests in Psychiatric and Medical Practice (Springfield, Ill.: Charles C. Thomas, 1969), p. 4.

Note 2. The Wechsler Intelligence Scale for Children Revised (WISC-R) (Wechsler, 1974) was published in 1974, twenty-five years after the original publication of the WISC.

has appeared in the research literature to date. This study, then, has attempted to extend the bilingual findings of Altus (1953), by including the variables she used, by adding a second Hispanic subgroup, namely, Puerto Rican children, and by regarding sex and grades as variables.

In very broad terms, this study adds new dimensions to previous intelligence studies in at least five unique ways: (1) Verbal, Performance, and Full-Scale measures as well as subtests scores were obtained on the Spanish WISC; (2) the sample size was large (N=120); (3) the sample was controlled for socioeconomic status (SES); (4) the study investigated sex and grade level differences; and (5) the sample was comprised of monolingual (N=60) and bilingual (N=60) children of the "same" ethnic background.

In an era dominated by a growing concern that global indices lack the specificity of providing a positive perspective on the intellectual attributes of bilingual/bicultural children, these "sieving" exploratory studies should have significant implications for bilingual psychometric theory, the lack of which has plagued the state-of-the-art for a very long time. The significance of this study, therefore, is a contribution in that direction.

Last, the final study examined the correlations between the major variables marshalled in this investigation. This investigation was also a study of the concurrent validity of the P-HCSCS using the Spanish WISC as the criterion.



Specifically, this study synthesized the data analyses from the two preceding studies and experimentally correlated the results of the P-HCSCS with those of the Spanish WISC between the two comparative samples with comparisons for specific subgroups. The significance of this study is that with further evidence of the predictive validity of the P-HCSCS, this instrument may prove to be an invaluable screening tool in which, of course, Puerto Rican children would be the ultimate beneficiaries.

Finally, the investigator considered the overall study substantially significant and intended for it to: (1) provide a useful affective instrument relevant to bilingual school psychologists, diagnosticians, clinicians, and others interested in self-concept assessment; (2) contribute useful information to those engaged in self-concept research; (3) add supportive data from a bilingual perspective with respect to Puerto Rican children; (4) provide comparative self-concept and intelligence data in areas of bilingual research where many inconsistencies and contradictory findings have been demonstrated (Fishman, 1965; Galvan, 1967; Posner, 1969; O'Brien, 1971; Greene and Zirkel, 1971;) and (5) generate new hypotheses for future researchers who wish to pursue the questions raised by this investigation or who wish to attempt replications of either portion of this study.



### Limitations of the Study

The results of this exploratory investigation should be interpreted in regard to the following limitations:

First, this study is limited to a sample of 120 Puerto Rican pupils, in grades three through five, randomly selected from the bilingual and mainstream programs from the public elementary schools in Springfield, Massachusetts.

Secondly, the affective interpretations of the Spanish modified version of the P-HCSCS, as reported herein, must be considered tentative and/or exploratory, due to the absence of normative information. That is, from a normative frame of reference, the specific population from which these data were drawn clearly precludes normative comparisons, and thus, this factor limits the scope as well as the conclusions. Hence, any comparison outside of this context is not known, but the present study, admittedly a beginning effort, offers a theoretical starting point towards a normative reference.

Thirdly, any generalization of the affective and/or intelligence studies cited in this research is further limited by the experimental bilingual subjects' receptive (language comprehension) and expressive (verbal language) abilities; language capabilities in L<sub>1</sub> and L<sub>2</sub>; previous test performance; cultural background (urban versus rural experiences); ages of the students studied; previous language dominance

measures (conducted for program placement); and, other uncontrollable intervening variables - such as, socio-economic factors, outside experiences, and parental influence consistent with specific cultural/family values and regionality. In addition, because these studies are of an ex post facto design, there is little, if any, control over the "true" dimensions of language use across these two groups. Therefore, at a minimum, all of the preceding complex interactive dimensions of bilingualism must be considered in evaluating the external validity of this study. Unfortunately, as previous research has pointed out (Madrid and Garcia, 1981), the attempt to deal with its complexity remains a dilemma.

Fourthly, to a degree, at least, the interrelationships between the affective and intelligence variables are limited and no inferences can be drawn regarding any cause or effect of these variables. Furthermore, these are correlative data and causative interpretations are, at best, speculative.

Finally, all the comparative contrasted data as delineated herein, as well as the resultant conclusions, must be tempered somewhat and defined as tentative, given the limited sample size, the quasi-experimental nature of the research design, and the complexity of bilingualism. Clearly, a much larger study would produce a more definitive exploration to either support, alter, or negate the present findings.

## CHAPTER II

### REVIEW OF THE RELATED LITERATURE

The plan of this chapter is to present an interdisciplinary review of the related literature in regard to self-concept and intelligence. Hence, directed by this two-fold conception, the organizational format will focus on the main theoretical concepts of self theory as well as pertinent research within the spectrum of bilingualism and intelligence testing.

Specifically, the chapter interweaves three major topics which gave direction to the study. The first topic presents a historical overview of the theoretical characteristics of self theory with particular reference devoted to definition, development, and measurement of the self-concept. A review of the affective instrument used in this study and selected studies of the self-concept are also presented.

The second topic, equally descriptive, focuses on the Wechsler Intelligence Scale for Children (WISC) and expounds on contemporary perspectives within the spheres of bilingualism and intelligence testing.

Finally, the third topic has, as its major focus, a review of the literature relative to subtest scatter on the WISC, and is organized within the parameters of diagnostic testing. Specific areas to be reviewed are the WISC, the Spanish WISC, and selected studies in profile patterns.



## Self-Concept

### Definitions

The acknowledgement of the "self" has a long history in psychology, but definitions describing the self are still embedded in complex personality phenomena. After decades of theory and research, an extensive body of literature supports the fact that there is an incredible diversity of ideas ascribed to the term "self." Among the thousand plus words hyphenated with self (Stringer, 1971) to describe the various components of this intricate construct in its full complexity are: actualization, image, personality, esteem, and perception, to name just a few.

Despite the multidimensional variations in self terminology to identify or describe some facet of the "self," the terms "self-concept" and "self esteem" remain the most synonymous (Calhoun and Morse, 1977). To clarify the self-concept/self-esteem distinction, the following definitions have been developed (Calhoun, Warren, and Kurfiss, 1976):

Self-concept: The way an individual perceives himself and his behavior, and his opinion of how others view him.

Self Esteem: The individual's satisfaction with the self-concept.<sup>14</sup>

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<sup>14</sup> George Calhoun, JoAnn Kurfiss, and Polly Warren, "A Comparison of Self-Concept and Self-Esteem of Black and White Boys," Clearing House, Vol. 50 (November, 1976), p. 132. Quoted in George Calhoun Jr., and William C. Morse, "Self-Concept and Self-Esteem: Another Perspective," Psychology in the Schools, Vol. 14, No. 3 (July, 1977), p. 321.



Operationally defined, the preceding connotations of these two definitions suggest that the self-concept tends to remain a more stable phenomena while self esteem tends to be less structured and more fluid. Straightforward as these two widely used definitions may seem, the distinction between them calls for an acute awareness on the part of the therapist. For example, therapeutic inferences based on a child exhibiting poor self-concept and low self esteem would differ in dynamics from a child exhibiting a positive self-concept and low self esteem. Likewise, it would appear that deviations in the self-concept of the child may result in more serious problems in emotional development than deviations in self esteem. Nevertheless, the descriptive distinction between these two self constructs is made clearer, again, by Calhoun and Morse (1977) when they conclude:

Consistent with this distinction, it is evident that self-concept is the logical developmental antecedent of self-esteem; one must first form an opinion of oneself, assessing one's capabilities and inadequacies, before being able to determine the degree of esteem or satisfaction to be accorded this "self."<sup>15</sup>

In contrast, as has been noted, a vast abundance of descriptive variations currently plague and obfuscate self terminology. That is, most theorists seem to agree that

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<sup>15</sup> Ibid., p. 320.

there are distinctive observable phenomena of the inner aspects of "self" (values, attitudes, traits, etc.) which can be singled out for objective description; not one of them alone, however, constitutes a satisfactory definition of the self-concept. Therefore, the following definitions among prominent self theorists may bring the concept of self into clearer focus and provide valuable inferences to the phenomenological construct of the self-concept, specifically its content and components:

Lecky, (1945)

The self-concept is the nucleus of personality.<sup>16</sup>

Combs and Snygg, (1959)

The organization of all the ways an individual has of seeing himself.<sup>17</sup>

Rogers, (1959)

An organized, consistent pattern of the perceived characteristics of the 'I' or 'me' along with the values attached to those characteristics.<sup>18</sup>

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<sup>16</sup> Prescott Lecky, Self-Consistency: A Theory of Personality (Long Island, N.Y.: Island Press, Inc., 1945), p. 160.

<sup>17</sup> Arthur W. Combs and Donald Snygg, Individual Behavior: A Perceptual Approach to Behavior (Rev. ed.; New York: Harper and Row, Inc., 1959), p. 126.

<sup>18</sup> Carl R. Rogers, "A Theory of Therapy, Personality, and Interpersonal Relationships, as Developed in the Client-Centered Framework," in Sigmund Koch (Ed.), Psychology: A Study of a Science (Vol. 3.; New York: McGraw-Hill, Inc., 1959), p. 200.

Jersild, (1960)

The self is made up of all that goes into a person's experiences of his individual existence.<sup>19</sup>

Purkey, (1970)

The self is a complex and dynamic system of beliefs which an individual holds true about himself, each with a corresponding value.<sup>20</sup>

Byrne, (1974)

The total collection of attitudes, judgments, and values which an individual holds with respect to his behavior, his ability, his body, his worth as a person – in short, how he perceives and evaluates himself.<sup>21</sup>

As previously mentioned, the foregoing definitions support the notion that the uniqueness of the self-concept precludes any commonality in which a universal definition may be applied. Thus, while the preceding definitions are most assuredly not an exhaustive coverage with reference to this elusive and abstract construct, many theorists, both historical and contemporary, have consistently emphasized that the self-concept has two major dimensions: it is dynamic, and it is strongly influenced by the feelings and attitudes a

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<sup>19</sup> Arthur T. Jirsild, Child Psychology (5th ed.; Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1960) p. 116.

<sup>20</sup> William W. Purkey, Self Concept and School Achievement (Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1970), p. 7.

<sup>21</sup> Donn Byrne, An Introduction to Personality: Research Theory, and Applications (2nd ed.; Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1974) p. 271.



person has about himself. Phenomenologically, these interpretations contrast with Davidoff's (1980) recent view in which she suggested that the concepts of self be considered a "summary construct," one that includes thoughts, emotions, interests, attitudes, feelings, and related phenomena. Likewise, in their comprehensive survey of the extensive literature dealing with the salient similarities found among self theorists, LaBenne and Greene (1969) specifically acknowledged these concepts, and summarized their fundamental findings in the following way:

Although each of these theorists introduced his preferred jargon, all used the term "self" to have one of three meanings; (1) a dynamic process; (2) a system of awareness; or (3) an interrelated process and awareness. The first meaning incorporated the cognition processes such as perceiving, interpreting, thinking and remembering. The second denoted the objectified form of awareness an individual gives to his feelings, evaluations and beliefs about himself. The third gave the body of awareness a psychodynamic quality in terms of its effect upon what is perceived, of how this perception is interpreted, and thus of human behavior and learning.<sup>22</sup>

Altogether then, the aforementioned findings provide impressive support that at the very core of all these descriptive definitions is a common perspective, namely, a congruence based on inferences derived from the uniqueness of the "self" and the individual's subjective experiences

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<sup>22</sup> Wallace D. LaBenne and Bert I. Greene, Educational Implications of Self-Concept Theory (Pacific Palisades, Ca.: Goodyear Publishing Company, Inc., 1969), pp. 2-3.



(Hilgard, Atkinson and Atkinson, 1975). Not surprisingly, then, on the basis of an extensive review of the vast array of contemporary affective literature, it appears that a unified approach at defining the self-concept has not been met with success; therefore the elusiveness of this construct continues to generate a variety of abstract definitions. In fact, recent research (Hall and Lindzey, 1978) indicates that despite the numerous variations of self terminology that has been formulated thus far, there is, as yet, no one best way to define this complex construct.

### Theories

In the development of self-concept theory, there has been two major influences since the early part of the century on theories of the origins of the development of the self. On one hand, the relative importance of biological determinants has been stressed, and on the other, the influence of sociological perspectives. Freud, for example, was a leading exponent of the former, whereas most contemporary theorists tend to place greater emphasis on the latter. However, the self in contemporary psychology, whether conceived as an object or process, continues to generate either congruence or conflict over the dominance of innate versus sociological influences.

Thus, the following contributions to "self-psychology," gleaned from a variety of literature and proponents who accord a central role to self-concept theory, historically

and contemporary, should convey the maturation of a trend which has led to a significant demarcated field of study not yet fully explored.

Sigmund Freud instigated the psychodynamic approach with the creation of psychoanalytic theory. In his voluminous contributions about the internal processes of personality structure, he postulated the existence of three functional components: the id, ego, and superego. Accordingly, Freud paid attention to the "self" under the concept of ego development and functioning. That is, he emphasized that the conscious logical part of the mind that develops as the child grows older was the "real" us, as we like to think of ourselves (Kagan and Haveman, 1972).

Viewed from this perspective, the structure of the individual's personality (partly conscious, partly unconscious), as he pointed out, is shaped by the interaction between biological and intrapsychic forces. Some of Freud's most monumental psychoanalytical formulations concerned concepts that the determinants of personality develop largely as the result of what occurs at predetermined fixed series of psychosexual stages during the first five years of life, particularly during the preschool years (Coon, 1977). Overall, Freud was the first psychoanalytical theorist to take into account all three personality influences that constitute personality development: biology, intrapsychic experience, and the present environment. There

is little doubt that in his psychoanalytic approach, evolved one of the most comprehensive and influential theories of personality ever presented (Bourne and Ekstrand, 1976).

William James, at the turn of the century, was one of the first American psychologists to write extensively on the concept of self (Epstein, 1977). In his Principals of Psychology, published in 1890, James wrote his famous chapter entitled "The Consciousness of Self," in which he identified the self as an object of knowledge consisting of whatever the individual views as belonging to himself. This includes a social self (views that others hold of the individual), a material self (an extended self which contains in addition to his own body, his family and possessions), and a spiritual self (the individual's emotions and desires). As a prominent functional psychologist in the early history of psychology, James' important contributions have clearly paved the way for later theorizing, both in the area of the consciousness and self-concept.

Charles Horton Cooley (1902), another earlier proponent of self-concept theory, viewed the self differently. He identified the self as:

that which is designated in common speech by the pronouns of the first person singular, 'I,' 'me,' 'my,' 'mine,' and 'myself.'<sup>23</sup>

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<sup>23</sup> Charles Horton Cooley, Human Nature and Social Order (New York: Charles Scribner and Sons, 1902), p. 136.



Underlying his theoretical writings, he introduced and formulated the social or "looking-glass self," in which we learn to view ourselves from the perspective of significant others. Accordingly, in Cooley's theory, it is only through "others" that we can acquire an awareness of our selves (Raven and Rubin, 1976).

Similarly, George Herbert Mead (1934), a distinguished sociologist and contributor to this field, expanded upon Cooley's looking-glass self and further introduced the concept of "generalized other," in which the individual thinks about himself in categories determined by social groups. As formulated by Mead's theory, the child conceptualizes himself from the perspective of a "significant" person - a parent, teacher, or some "other" respected figure. On the basis of this theory, Mead postulated that the self is definitely a social and cognitive product. He described the self in these terms:

The essence of the self...is cognitive, it lies in the internalized conversations of gestures which constitutes thinking or in terms of which thought or reflection proceeds, and hence, the origin and foundations of the self, like those of thinking are social.<sup>24</sup>

In sharp contrast, Harry Stack Sullivan, a prominent psychiatrist and intrepid theorist during the early 1920's,

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<sup>24</sup> George H. Mead, Mind, Self, and Society (Chicago: University of Chicago Press, 1934), p. 173.



made somewhat the same point, and also emphasized that the self arises out of social interaction. Like Cooley and Mead, and contrary to Freud, Sullivan felt that the individual's psyche relates to interpersonal situations rather than to an intrapsychic unconsciousness (Chrzanowski, 1978). In terms of Sullivan's theory, it was his unique contribution to investigate the self from a different orientation and stress the interaction of the child with significant others, particularly the mother figure, rather than with society as a whole (Chapman, 1976). Specifically, his theory emphasized that the self is not fully formed at an early age, but changes with a series of crucial social stages encountered throughout an individual's life span.

Eric Erickson, a distinguished and contemporary psychoanalyst, offers a similar but still different theory. As a leading therapist in psychoanalytic tradition, he emphasizes a unique theory of eight stages of psychosocial development, each of which is characterized by a particular crisis: each individual must, in effect, resolve each one of these predetermined crises throughout his life cycle (Hall, 1983). Basic to his scheme, Erickson stresses the importance of ego identity, and like Sullivan, views both the powerful effects of childhood experiences and the continual social interactions that take place during each developmental stage throughout the individual's life span. And whereas Freud's theory postulated psychosexual stages

and personality primarily established during the preschool years, Erickson, in contrast, gives his stage theory a psychosocial cast and believes that the elementary school plays a significant role in shaping identity. For Erickson, it is in this latter state (Industry versus Inferiority) that the fourth crisis appears: the child at this crucial stage of psychosocial development must master learning and competence or experience failure and inferiority (Vander Zanden, 1978).

Nevertheless, notwithstanding the foregoing diverse and highly simplistic delineations of pioneering self theories, there has been since these viewpoints were formulated, a proliferation of many self theories (psychoanalytic, social learning, traits, factor-analytic, phenomenological, etc.) of unprecedented proportions. While it is far beyond the scope of this research to review the entire spectrum of self theories that have been espoused by numerous equally distinguished self theorists (most notably, Maslow, Allport, Banduara, Cattell, Eysenck, among many others), the final theory, however, is confined to that proposed by Carl Rogers, a major contemporary psychotherapist, who stresses the uniqueness of self in humanistic terms. His theory is of greater relevance to this study, because no one in contemporary psychology has been more influential in providing a phenomenological approach to self theory in which empirical research on the self structure has become a

reputable subject for scientific inquiry (Hjelle and Ziegler, 1981).

Carl Rogers, a prominent contemporary humanistic theorist, is widely recognized for his efforts in broadening the scope of phenomenological theory, partly as a result of his training in theology and clinical psychology as well as his client-centered approach to psychotherapy. According to his relatively new approach, he embraces the "self" or "self-concept" (terms used interchangeably) as a phenomenological concept (a pattern of conscious perceptions) which is of central importance to an individual's behavior and adjustment. In general, the essential theme of Rogers' writings is that as a result of interactions with the environment, the self becomes invested with values. Put simply, he believes that the self has a single goal: to actualize, maintain, and enhance itself (Marx and Hillix, 1963). Thus, unlike psychoanalytical theorists, he stresses the point that we are not born with a self-concept but with an urge to become a fully functioning and actualized person (McConnell, 1974). Moreover, within his conceptual framework, he emphasizes the view that behavior cannot be understood without reference to the individual's subjective experiences, that is, interpersonal perceptions are subjective, evident only to the experiencing individual.

Specifically, as exemplified by Roger's theory, he emphasizes the interrelationships among the organism, the



self, and the phenomenological field. In contrast, he refers to the organism as the total person, the phenomenal field to all experiences the person has undergone, and the self to the sense of "I" or "me" that results from all life experiences (Goleman, Engen and Davids, 1982). In brief, much of the breadth of ideas in Rogers' humanistic theory is his emphasis upon the phenomenological "self," which is, according to his view, conscious (from an internal frame of reference) and therefore, admissible to affective investigation. This realization, as a major criterion, has had a surprisingly strong impact on contemporary developments in clinical psychology and psychiatry, particularly in terms of self-concept research which is now being pursued at an accelerating rate (Ribner, 1978; Reynolds, 1984).

Nevertheless, despite the abstract nature of many self theories from simple to complex that can be adduced ad infinitum from the psychological literature, it appears that three major paradigms predominate: (a) the cognitive theorists (e.g., Montessori, 1912; Piaget, 1952; Kagan and Moss, 1962; Kohlberg, 1968; Mischel, 1977) who support an individual-environment interaction theory (the self phenomena is influenced from the moment of birth onward as a result of organism-environmental interactions), (b) the behavioral theorists (e.g., Skinner, 1971; Bijou and Ribes-Inesta, 1972; Strain and Shores, 1977) who support an "environmental-contingency" theory, (the self phenomena is



influenced by events in the environment - in particular, between personality components and environmental determinants), and (c) the maturational theorists (e.g., Freud, 1938; Erickson, 1963; Rogers, 1961; Perls, 1973; Maslow, 1970; Gesell, Llg and Ames, 1974), who conceive of the self phenomena as an orderly unfolding of prepatterned stages of behavior throughout life. Indeed, amidst all of these foregoing theories, each theoretical approach, however diverse, has generated massive amounts of research that has led to an increased understanding of the self-concept, particularly its origin and development. Obviously, in an area as complex as the self-concept, there can be no definitive theory - hence, no one frame of reference - that has been universally accepted. Yet implicit among all of these conceptual frameworks is a strong emphasis within and among biological, psychological, and psychosocial phenomena; all of which serve to supplement and compliment each other.

Alexander Thomas (1981), a contemporary psychiatrist, views all three processes as having merit and sums up nicely our present state of knowledge:

the weight of recent developmental research has made it clear that the human infant is a biopsychosocial organism from the moment of birth onward.<sup>25</sup>

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<sup>25</sup> Alexander Thomas, "Current Trends in Developmental Theory," American Journal of Orthopsychiatry, Vol. 51, No. 4 (October, 1981), p. 601.

All in all, in spite of the diversity, self-theories have an invaluable contribution in understanding the dynamics of the self-concept as well as a means for assessing, investigating and modifying it.

### Development

There is general agreement among contemporary theorists that the self structure develops early in life, probably when the infant differentiates between himself and his surroundings, but at what phase in infancy is debatable. Since developmental research has consistently affirmed the position that self awareness is first manifested in a bodily sense of self, it is possible, therefore, to hypothesize that the self-concept emerges soon after birth and continues throughout life, although some researchers have shown that the self-concept is stable by the time a child enters school (Canfield and Wells, 1976). Nevertheless, the basis of development is the interaction of the individual through personal and social experiences (Maslow, 1962; Rogers, 1969; Chess and Thomas, 1982).

Accordingly, in the earliest period of infancy, the pathway of development begins with self cognition. During the first few months following birth, the only process variables present are primitive and physiological dependence predominates. During this post-natal mother-infant period, the basic self-concept appears to be in its broadest sense, an awareness of a biological self around which the infant's

physical and emotional needs are organized. With further maturation, however, as Jersild (1960) points out, signs of self awareness appear during this first year of infancy and quickly increases from then on. In this regard, Yamamoto (1972) adds to Jersild's theory, and reported that:

While the contribution of organic sensations and direct body awareness ought not to be ignored, a concept of self can scarcely be developed without adequate interpersonal relations.<sup>26</sup>

As is well known, a number of theorists, especially those influenced by psychosocial development, supports this aforementioned theory (Langford and Rand, 1975; Cantor, 1977). Insofar as the earliest formation of the self-concept is concerned, recent research suggests that the critical period of differentiation occurs at about the age of seven or eight months (Kaban and Shapiro, 1977; Cohen, 1977). In this connection, it is during this latter period of maturation that the basic personification of self (still rudimentary and uncrystallized) emerges, and the child's self awareness becomes immensely accelerated (Maher, 1966; Rappoport, 1972). This early first stage is, then, the primary emergence of self-concept development.

In early childhood, the expansion of the self-concept occurs through continued personal and social experiences

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<sup>26</sup> Kaoru Yamamoto, (Ed.) The Child and His Image: Self-Concept in the Early Years (Boston, Ma.: Houghton-Mifflin Co., 1972), p. 3.



(Boger and Ambron, 1969; Ausubel and Sullivan, 1970; Ames, Llg and Haber, 1982). That is, as the infant evolves from the sphere of infancy to early childhood, the child develops a sense of bodily "me" and begins to differentiate self from his surrounding environment. With few exceptions, as the child approaches two years of age, rapid acceleration of language emerges and the regular and consistent use of his name further enhances the process of self awareness (Suinn, 1970; Kagan, 1981). Likewise, as the child achieves major mastery over language and thought processes, social interactions with his family and peers begin, and these new experiences add yet another significant dimension to the shaping of his emerging self-concept.

By three years of age, as the preschool child grows in maturity with advancing competence (especially in language, motor and sensory skills), his organization and perception of his surrounding environment becomes much more refined, particularly his self component. As far as this age is concerned, the years from two to three are those in which the child identifies with his own sex, begins to develop a conscious, and most importantly, acquires a variety of diverse internalized behaviors to master the growing complexities that contribute to his own existence (Briggs, 1970). While there is little doubt that the mother-figure plays a powerful role in shaping the child's emerging self-concept, there is also little doubt that it is reinforced by



a wider range of social/environmental influences. Biber and Franklin (1967) characterized this stage as follows:

The range and degree of freedom for further extension into the environment depend on how much the life environment, particularly the interpersonal component, contributes to strengthening the self, both in its imaging and integrating function. Having established the unity and distinctiveness of the self as a physical organism and a psychological entity, with a name, referable as "I," "me," and "mine," during the first two or three years of life, the preschool child keeps the self as a nucleus as he moves toward conceptual organization of experience.<sup>27</sup>

Again, with increase in age, (three to four) as the mid-preschool child moves along this intermediary continuum to a more complex level organization, he achieves an increasing sense of his own identity, and in this context, knows who and what he is. That is, as the child learns more about himself based not only on his views, but also from the generalized views of "others," a sense of ideal self emerges (Rogers, 1951). Accordingly, this image, once evolved, contributes to the mid-preschool child's upward trend of more advanced behavior (often referred to as a conscience and/or superego) which further influences his internal cognitive structures toward self. More specifically, as the ideal self becomes continuously intertwined in the mid-preschool

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<sup>27</sup> Barbara Biber and Margery B. Franklin, "The Relevance of Developmental and Psychodynamic Concepts to the Education of the Preschool Child," in Jerome Hellmuth (Ed.), Disadvantaged Child (Vol. 1.; New York: Brunner/Mazel Publishers, Inc., 1967), p. 314.

child's self dimension, it provides a course by which much of his behavior is fashioned first by parents and others, but later by ways that are consistent with his self-concept. Hence, here too, as confirmed by many self theorists, this particular phase is marked not only by an accelerated expansion of cognitive functioning, but also by the child's advancing ability to think and act on his own, and, increasingly, to measure himself against abstract standards, a set of ideals (Stone and Church, 1975). Nevertheless, as the mid-preschool child moves far beyond the sensorimotor and/or concrete state (Piaget, 1952) to more formal abstract processes, apparent in this period, current evidence suggests that the mid-preschool child can measure himself accordingly to the demands of social adaptation (Gordon, 1969), respond to his own name, and above all, in terms of abstract thinking, do many more things that his three year old self could not accomplish (Ames and Llg, 1976). However, even during this period of increased identity formation, rapid intellectual development and wider personal-social experiences; the self-concept, as viewed by many contemporary theorists, is still a rudimentary structure tending toward a higher complexity of growth.

In contrast, by elementary school age (about the age of five), as a result of increased peer relationships and exploratory play behavior, the child moves towards an individual sense of identity (Bernard, 1978). Typically,

as the child grows in terms of self-identity, self-ideal, self-esteem, and a magnitude of other interrelated psychological processes, his increasing peer groups (especially those of the same age and sex) begin to play a vital role in his expanding social consciousness (Johnson and Medinnus, 1969). Above all else, by this time, all of the latter psychodynamic components are in accord with his emerging self-concept, and it is in this stage that the child becomes socially directed. To a large extent, this particular age marks the transitional period that the child becomes conscious of himself as a separate being and moves towards a genuine sense of self. As Allport (1955), an authority in this field, wrote:

Until the age of four or five we have good reason to believe that as perceived by the child personal identity is unstable. Beginning at about this age, however, it becomes the surest attest a human being has of his own existence.<sup>28</sup>

The middle years of childhood (six through twelve) are even more critical to the emerging self-concept as well as the turbulent period of later adolescence. These are the critical elementary school years in which the child begins the formal learning processes which include learning to read, to perform arithmetic computations, and to develop other related skills. It is also the time, that the child's

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<sup>28</sup> Gordon W. Allport, Becoming: Basic Considerations for a Psychology of Personality (New Haven, Ct.: Yale University Press, 1955), p. 44.



sense of self (still malleable and unstructured) develops, based on the way "others," teachers, and peers, treat him; developing also from his own actual accomplishment and a feeling of competence. This critical period is captured by Horrocks (1969), in these terms:

In general, the experience of going to school is the most important social change a child will encounter between the school period and adolescence, and its ramifications will permeate and shape nearly all aspects of his life.<sup>29</sup>

Obviously, relevant to this dynamic interplay is the emphasis by the educational enterprise that different children exhibit different styles of learning, and by implication, different strengths. Too often, perhaps, the complexities of these early competitive experiences have an important bearing on the child's self structure, which involves his beliefs, ideals, expectations, and demands, which he has formulated with respect to his own behavior (Garrison and Garrison, 1975). Nevertheless, from teachers and peers, the child receives continual feedback regarding his adequacy and/or inadequacy, and these positive or negative interactions serve to shape and further mold his self perceptions. From a learning point of view, these elementary years, then, mark the discernable stages in which the child's self-concept as a good student (a success) or a

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<sup>29</sup> John E. Horrocks, The Psychology of Adolescence (3rd ed.; Boston, Ma.: Houghton-Mifflin Co., 1969), p. 229.

poor student (a failure) emerges. As Pepper (1976), a prominent sociologist, noted:

Academic success or failure appears to be deeply measured in concepts of self as it is in measured ability, if not deeper.<sup>30</sup>

Thus, as is well known by educators in the field, objectively identical accomplishments may make one child elated while another is deeply disappointed. In some instances, these subtle and "hidden" disappointing patterns of failure can become so pronounced that the sensitive child, because of his lack of maturation, either loses interest in school or develops a negative self-concept or both, which culminate in underachievement and/or consequent school failure. Likewise, an unfavorable self-image can also result from the educators' frequent emphasis upon failure rather than success. As Rioux (1967) commented:

In such a context a child sees himself as a highly deficient person. It is not surprising then that by third grade his self-image of inability is so crystallized that he is approximately one year behind academically, by sixth grade approximately two years behind, by grade eight two and one-half to three years retarded academically, and by ninth grade a top candidate for dropping out.<sup>31</sup>

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<sup>30</sup> Floy C. Pepper, "Teaching the American Indian Child in Mainstream Settings," in Reginald L. Jones (Ed.), Mainstreaming and the Minority Child (Reston, Va.: The Council for Exceptional Children, 1976), p. 141.

<sup>31</sup> J. William Rioux, "The Disadvantaged Child in School," in Jerome Hellmuth (Ed.), Disadvantaged Child (Vol. 1.; New York: Brunner/Mazel, Inc., 1967), p. 92.

In this connection, there can be no argument that an increasing number of American theorists (Aspy, 1977; Newman, 1977; Buscaglia, 1978; Beeler, 1978) have come to recognize the significance of the self-concept on learners and learning. Thus, given the typical background as sketched above and as a result of an affective disorder imposed on a child by, for example, the school system, the development of a healthy self-concept is of a serious growing concern to psychologists, as well as educators, parents, and children themselves. As studies by Hamacheck (1971), Tyler (1973), Inbar and Adler (1976), Moskowitz (1978), and Anderson (1981) attest, the interpersonal conception of self, particularly within the context of the shaping influences in education is a crucial concern, if not the central concern. Combs (1962) points this out as follows:

The self-concept, they tell us, is one of the most important factors affecting the way in which an individual will behave. If this is true, then any educational program which hopes to make a difference in its educational charges must be concerned with the nature of the self and its development.<sup>32</sup>

In a similar vein, Boyd McCandless (1967) broadened the scope of the self-concept. His views have provided

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<sup>32</sup> Arthur W. Combs (Ed.), Perceiving, Behaving, Becoming: A New Focus for Education (Washington, D. C.: Yearbook of the Association for Supervision and Curriculum Development, National Education Association, 1962), p. 93.



valuable perspectives in the area of self theory, particularly in the area of child development. By way of contrast, in clarifying the consequences of a poor self-concept, McCandless puts it in these words:

It can be predicted that poor self-concepts, implying as they so often do a lack of confidence in facing and mastering the environment, will accompany deficiency in one of the most vital of the child's areas of accomplishment - his performance in school.<sup>33</sup>

In any case, beyond its educational significance, it seems clear that the development of the self-concept is no sudden acquisition. It is, as many theorists (Kretch, Crutchfield, and Livson, 1969) point out, a never completed patterning process in which change, both positive and negative, continuously interacts between and among many dimensions - the biological, the psychological, and the social. Nevertheless, central to much theory and research is the notion that many complex factors contribute to the maturation of the self, and, as formulated by self theorists, the individual progresses from an awareness in infancy to a much more broadened complex social environment with a limitless diversity of self-concept behavior. Finally, apropos with the foregoing, the following quotation, again from McCandless (1967), amply exemplifies

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<sup>33</sup> Boyd R. McCandless, Children: Behavior and Development (2nd ed.; New York: Holt, Rinehart and Winston, Inc., 1967), p. 270.

his conception of self-concept development. He further wrote:

From the learning point of view, the self-concept is the apex - the culmination - of all the social and personal experiences the child has had. Conditioning and instrumental learning, primary and secondary generalization, reward and punishment, motives and drives, expectancies and probabilities, conflicts, fixations, and displacements - all these processes and experiences play a part, first in distinguishing "others," from "me," later in an only partly articulating personal evaluation of "me," and finally, in the mature "me," who may be cynical or trusting, happy or depressed, or self confidently male or female.<sup>34</sup>

### Measurement

In the past few years, the assessment of the self-concept has been the professional focus of a great deal of educational interest (Scott, 1981; Curtis and Shaver, 1981; Brady and Antonetti, 1981; Apodaca and Cowen, 1982; Knoff, 1983) and clinical research (Wells, et al., 1979; Callagan, 1981; Koppitz, 1982<sup>a</sup>, 1983<sup>b</sup>; Obrzut and Cummings, 1983). As Anderson and Anderson, (1982) make clear:

If, indeed, affective characteristics are important both as means and ends of education, then the assessment of these characteristics is equally important. We need to understand students' affective characteristics in order to provide proper instructional conditions and to evaluate the effectiveness of our affective education programs.<sup>35</sup>

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<sup>34</sup> Ibid., p. 254.

<sup>35</sup> Lorin W. Anderson and Jo Craig Anderson, "Affective Assessment Is Necessary and Possible," Educational Leadership, Vol. 39, No. 7 (April, 1982), p. 525.

Historically, both phenomenological theory and research have given rise to a vast array of affective instruments to assess this "hidden" but crucial personality dimension. The most prominent among these include: Questionnaires, Semantic Differentials, Self-Observation Reports, Yes/No Inventories, Q-Sorts, Sociograms, and Adjective Check-Lists, to name a few. Admittedly, there are, in addition to these major instruments, innumerable other designs of both projective and subjective strategies that can be classified in almost every conceivable dimension. Further, concomitant with the recent interest in the identification of children's personality and/or psychopathology at the earliest age possible (spurred by Public Law 94-142, The Education for all Handicapped Children Act of 1975), even a cursory review of the educationally oriented literature attests rather conclusively that psychological inquiry in these crucial areas is not diminishing, but indeed, is expanding (Block, 1961; Snider and Osgood, 1969; Janis, Mahl, Kagan, and Holt, 1969; Megargee, 1972; Ratliffe and Herman, 1974; Convey, 1981; and Fuller and Rankin, 1984).

In general, many researchers (Sarason, 1972; Erickson, 1978; Cofer, 1979) have shown that there is almost a limitless variety of affective methodologies in which the aforementioned instruments may be used within the framework of psychoeducational assessment. For example, among the more popular approaches in elementary practice are puppet play,



pictorial tests, human figure drawings, sentence and story completion methods, autobiographies, personality, attitude, and interest inventories, and numerous other "game-like" variations upon which the child must impose meaning, such as describing what is happening to people or animals depicted in picture cartoons, evaluating the content analysis of sentences or stories and evaluating themselves, family, or peers on Likert-type scales. Nevertheless, a review of the pertinent literature attests to the fact that the utilization of these multiple measures of self-concept compliment the screening process, and unlike standardized intelligence tests, provide a greater understanding of the interpersonal needs of children on an ever widening variety of emotional, social, and academic dimensions (Gilbert, 1969; Bellak, 1975; Karmel and Karmel, 1978; and Harris and King, 1982). As Combs, Avila, and Purkey (1979) stated:

There is even evidence to suggest that the self-concept may be a better predictor of a child's success in school than the time honored IQ score.<sup>36</sup>

Although the inferred self-concept (the foci of this investigation) has, on the whole, been emphasized in most affective constructs (Jourard, 1971) more recently, other affective attributes equally valuable, such as significant

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<sup>36</sup> Arthur W. Combs, Donald L. Avila, and William H. Purkey, "Self-Concept: Product and Producer of Experience," in Dov Peretz Elkins (Ed.), Self-Concept Sourcebook: Ideas and Activities for Building Self-Esteem (Rochester, New York: Growth Associates, 1979), p. 81.

others, (e.g., family, friends, peers, teachers) (Bradley and Newhouse, 1975; Barnett and Zucker, 1975), behavioral disorders (Quay, 1983; McDermott, 1983), attitudes toward school subjects (McMillan 1976), stress (Chandler, 1983), depression (Poznonski, 1982; Reynolds (1984) and a multitude of other social-emotional directions of study have been designed and these multidimensional variables provide an even broader base to the psychological manifestations of children's affective disorders. Although relatively new in scope and application, these instruments have moved from the purely theoretical positions of many self theorists to a rather prominent place in research, with the widespread proliferation of literally hundreds of impressive and unique psychometric devices in which an individual can consciously or unconsciously project his inner perceptions to an unlimited variety of affective dimensions. The following descriptive reviews of both objective and subjective strategies (widely used in current research, education, and clinical practice) should make clear the major features between these two diverse approaches.

In very broad terms, there are two types of assessment procedures to measure the self perceptions of children: objective tests and projective tests. In regard to the former (e.g., Self-Descriptive Inventories, Adjective Check-Lists, Q-Sorts, etc.), the subject rates himself with respect to a series of attributes with regard to his

personal perceptions, and the responses (the conscious aspects of his personality) are scored regardless of who administers the instrument and/or analyzes the results. In regard to the latter instruments, however (e.g., Rorschach, Thematic Apperception Tests, Human Figure Drawings, etc.), the subject is requested to respond to relatively unstructured stimuli, such as interpreting a series of inkblots, pictures, or drawing a human figure and the responses (the unconscious aspects of his personality) are scored by subjective and structured guidelines underlying each specific instrument. From this, as many phenomenologists believe, the phenomenal and non-phenomenal self emerges as a separate measurable entity (Martinek and Zaichkowsky, 1977). Nevertheless, delineation of affective data from either approach has proved to be a valuable asset in the identification and/or screening process of problematic children; a fact that is well supported in both the affective and psychopathological literature (Ginott and Harms, 1965; McIntire and Drummand, 1977; Francescani, 1982; Schindler, 1982; Combs, 1982; Steinhauer, 1983; Carlson and Lahey, 1983; Forman and O'Malley, 1984).

In application, most of the self disclosure instruments are self administered and are of the paper-and-pencil type format. The subject is presented a series of statements (multiple choice, forced-type, true-false, yes-no, etc.) descriptive of personality or emotional attributes which,



the subject is to indicate, do or do not pertain to him. For example, the subject may be requested to respond to a variety of personality descriptive statements such as "I am thoughtful," or "I have trouble making new friends," by encircling "yes" or "no" on answer sheets or test protocols. Obviously, there are no right or wrong answers to the specific items and there is no time limit. Broadly defined, whatever instrument is used, every choice of every subject confers a positive, neutral, or negative value, upon the pattern of attitudes the subject entertains or assumes concerning his feelings, emotions, and other personality phenomena. This normative data (answers elicited in a positive direction) is then tabulated algebraically (perhaps with a an overlay key) to facilitate scoring and the resulting responses are then calculated for an assessment of the child's global self-concept.

From a psychometric perspective, a number of other unique instruments provide, in addition to the unidimensional global score, subscale scores which enable specific categorical dimensions to emerge (e.g., social, physical, emotional, etc.), that, when taken together, measure a dozen or more affective dimensions at the same time. These individually derived scores are generally computed separately. Logically, from a multiple dimensional viewpoint, these separate scale parameters allow much more self-insight into various behavioral characteristics that make

up the less tangible global score and, as such, are of particular value in targeting specific phenomena within the child's over-all affective spectrum.

Theoretically, much of the rationale for the use of self disclosure measures lies in the assumption that since most of the individual's behavior is related to interpersonal processes, the feelings of one's self are only known by that individual. Hence, as viewed from the perspective of many self theorists (Bloom, 1964; Coopersmith, 1967; Hart, Kehle and Davies, 1983), interpersonal inferences (positive or negative) are beyond the observation of anyone other than the individual's private interpretation. In this connection, Rogers (1951) puts it in these words:

The best vantage point for understanding human behavior is from the internal reference of the individual himself.<sup>37</sup>

In a parallel vein, Coleman (1964) noted that:

The self structure, like gravity, cannot be observed directly but is inferred from the finding that various psychological functions appear to operate in terms of some unifying principal... It has a developmental course, is influenced by learning in both structure and degree of differentiation, and can be studied by various experimental procedures.<sup>38</sup>

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<sup>37</sup> Carl R. Rogers, Client Centered Therapy (Boston, Ma.: Houghton-Mifflin Co., 1951), p. 494.

<sup>38</sup> James C. Coleman, Abnormal Psychology and Modern Life (3rd ed.; Chicago, Ill.: Scott, Foresman and Co., 1964), p. 62.

Nonetheless, despite the increasing literature dealing with the assessment of this phenomenological construct, conceptual and methodological issues have been raised over their use both in research and in practice (Schwartz, 1971; Anderson, et al., 1975; Anastasi, 1976). Wylie (1974), for example, noted that self-concept constructs need to be studied and improved. She has pointed out that some of the major methodological problems are construct validity, over generalizations, intercorrelations, internal consistencies, and a lack of extensive exploration. Similarly, along these lines, Crowne and Stephens (1961) have described with biting clarity that there are no scientific data establishing the equivalence of assessment procedures used in the various techniques; that a clear definition of the variable "self concept" being tested is unavailable; that the parameters of the self-concept are not sufficiently defined to permit valid sampling (a procedure critical to psychometrics); and, last, that it is impossible to determine whether the subject's responses are based on a defense projection or his actual self image.

While some self theorists would agree that the assessment of the self-concept is complex and many psychometric variables are yet to be resolved, most would also agree that these instruments, however imperfect they may be, can provide excellent quantitative descriptions of many psychic, psychological, and educational behaviors which cannot be



studied by other measuring devices (Helmstadter, 1970). As Edelbrock (1983) says in his evaluation of rating scales:

...rating scales provide an efficient and cost - effective way of obtaining objective and reliable information regarding child behavior. They can be used to improve educational and mental health services for children, particularly if they are used in broader "multi-method" assessments involving direct observations, psychological testing, or clinical interviews.<sup>39</sup>

Edelbrock is echoed by Prout (1983) who focuses on the importance of affective assessment within the schools, and adds:

The social-emotional assessment of children and adolescents remains an important function of the school psychologist. This role has been made even more important by the legal and social mandates (e.g., Public Law 94-142) to provide educational programs for children with severe emotional and behavioral difficulties, as well as the move to provide comprehensive psychological service programs within the schools...<sup>40</sup>

Although the appraisal of the self-concept (as in intelligence) is not without its critics (Divoky, 1978;

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<sup>39</sup> Craig Edelbrock, "Problems and Issues in Using Rating Scales to Assess Child Personality and Psychopathology," School Psychology Review, Vol. 12, No. 3 (Summer, 1983), p. 298.

<sup>40</sup> H. Thompson Prout, "School Psychologists and Social-Emotional Assessment Techniques: Patterns in Training and Use," School Psychology Review, Vol. 12, No. 4 (Fall, 1983), p. 378.

Sternberg, 1984), the pace of these classificatory instruments, techniques, and funds of various knowledge (aimed at tapping the underlying structure and organization of the self-concept) have, in fact, become increasingly important both in educational relevance and in the practice of school and clinical psychology (Chang, 1976; Beeler, 1978; Zeeman, 1982; Lachar and LaCombe, 1983; Conti, 1983; Barclay, 1983; Martin, 1983; Shellenberger and Couch, 1984).

In fact, contrary to the position of a decade ago, an examination of Buros' Eighth Mental Measurements Yearbook and major test catalogs will document that affective instrumentation, despite some technical inadequacies, is an expanding and flourishing field. While a review of these approaches is far beyond the scope of this study, suffice it to say that the assessment of the self-concept is as solid as any in the entire field of psychological measurement.

In this connection, then, a few of the most widely used instruments of both types (as well as a few selected studies) will be briefly described.

Draw a Person Test (DAP). Most widely used among children is the DAP Test which has gained acceptance by clinical and school psychologists (both as a projective technique and as a test of mental maturity), after the publication of Machover's Personality Projection in the Drawing of the Human Figure (1949) and Buck's House-Tree-Person Technique (H-T-P) (1948) (Koppitz, 1968).

In practice, this unstructured test can be used with a group of children or administered individually. The child is given an 8 1/2 x 11-inch sheet of white paper and asked to draw a man or more simply to draw a person. On this basis, the size, the placement of the figure, the pencil pressure, the emphasis or omission of body parts, and other pertinent details are analyzed.

As a diagnostic device, however, the drawing taps a deeper unconscious layer through the child's defenses, and reflects his impulses, anxieties, and conflicts. Relative to an educational perspective, some theorists (Machover, 1949; Koppitz, 1983) believe that the drawing represents either a self portrait, a perception of significant others, or the youngster's ideal self. Koppitz (1983), an imminent authority in this field, points this out as follows:

Projective drawings can serve four major purposes in the assessment of children. (1) Human Figure Drawings or HFDs reflect the youngster's personality and self-concept; (2) Family Drawings show children's perception of their family and their place in the family; (3) School Drawings explore pupils' attitudes toward teachers and school; and (4) Figure Drawings can reveal attitudes toward social and cultural groups.<sup>41</sup>

Without question, Human Figure Drawings have become one of the most widely used projective techniques in the

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<sup>41</sup> Elizabeth M. Koppitz, "Projective Drawings with Children and Adolescents," School Psychology Review, Vol. 12, No. 4 (Fall, 1983), p. 422.



educational settings. In fact, recent research (Vukovich, 1983) has established empirical support that the Draw a Person and House-Tree-Person tests alone accounted for 60.7 percent of the projectives used by school psychologists (excluding the Bender-Gestalt; See Note 3). Thus, it is no chance that most psychologists agree that it is one of the few techniques which can be used both as a developmental test (mental maturity) and as a projective method (self-concept), since samples can usually be obtained for the subject at all stages in his/her development.

Overall, among the many advantages cited in favor of HFDs are the facts that besides being easy to administer, there is no time limit, it can be individually or group administered, it is non-threatening, and can be used where language barriers and intellectual limitations exist (Tarzan, 1976). This test is without a doubt, one of the most popular projective techniques in both clinical and academic settings because of its demonstrated efficacy in this respect.

Viewed from this perspective, then, the accompanying human figure drawings (Figures 1a and 1b) may help to illustrate the usefulness of this projective technique in contemporary school psychology.

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Note 3. The Bender-Gestalt is usually administered to assess visual-motor integration, not personality or self-concept.

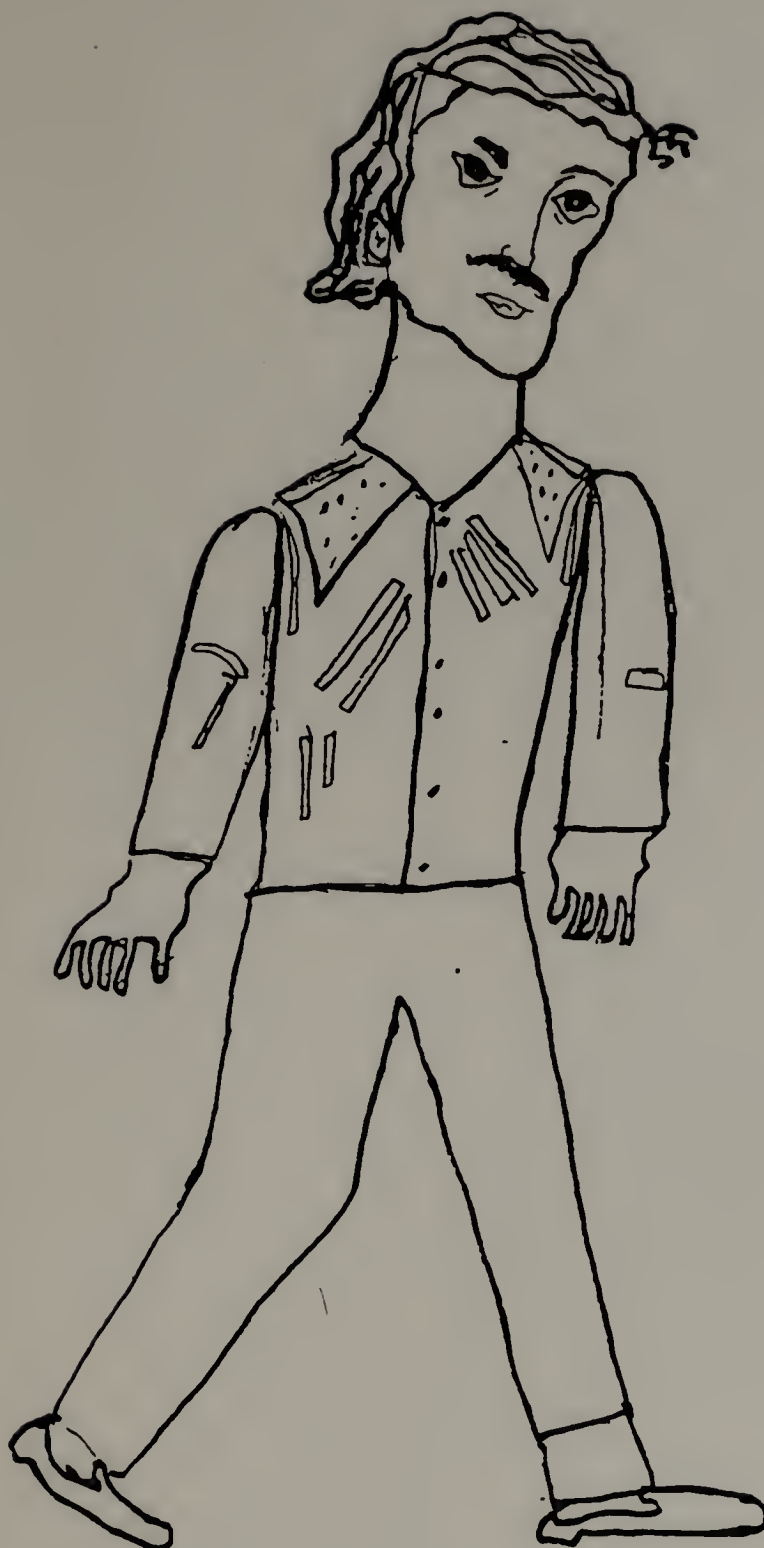


Figure 1 a. A Draw-A-Person Sample by a Hispanic Puerto Rican Male Youngster: 8 years - 4 months of age.

This child's Spanish WISC Full-Scale IQ score (at the time) was 112, with a Verbal IQ score of 113, and a Performance IQ score of 108. Note especially his detailed analysis and mustache. (Source: from the author's files).



Figure 1 b. A Draw-A-Person Sample by a Hispanic Puerto Rican Male Youngster: 8 years 6 months of age.

This child's Spanish WISC Full-Scale IQ score (at the time) was 54, with a Verbal IQ score of 46, and a Performance IQ score of 71. Note especially: the asymmetry, the omission of the body, and the short arms. Thus, from the HFD and from his performance on the Spanish WISC (as well as other tests), it was predicted that he would have considerable difficulty with regular school achievement and that he was well placed in a special bilingual class. (Source: from the author's files).



The Sentence Completion Test (SCT). Another projective procedure which has proven highly useful to self-concept assessment is sentence completion. Basically, this test is a semi-structured clinical technique which requires the subject to complete a variety of sentences for which a stem of one or more words is supplied. For example, sample items from a typical inventory may appear as follows:

1. I wish .....
2. My father is .....
3. Sex is .....
4. I hate .....
5. Some teachers .....

In practice, administration of the SCT is relatively simple. The subject is instructed to answer his true feelings quickly with the first thought that comes to mind upon hearing or reading the given stem. Used as a clinical device, the attempt is to ascertain the subject's self-concept, interests, anxiety, etc., and, in general, to detect any unusual and/or bizarre responses that may need further exploration. Obviously, there are no norms or data available on reliability and validity. Although much of the criticism regarding the use of SCTs is certainly valid, there seems to be much potential in the basic simplicity of the test as a screening device to be used with young children. Nevertheless, where published evidence is

available, it is generally affirmative. As SCT proponents Hart, Kehle, and Davies (1983) point out:

...Because SCT responses come directly from the child with relatively few inferential statements by the school psychologists, parents and teachers can trust their face validity. SCTs provide more specific, concrete statements about the child's feelings and thoughts across a number of issues that are easily incorporated into the psychological report. These statements are extremely useful in developing appropriate, individualized treatment strategies.<sup>42</sup>

Rorschach (Inkblot) Test. The best known and most widely used projective technique in both clinical work and research is undoubtedly the Rorschach. The test consists of ten 6 x 9-inch cards, each having a different bilaterally symmetrical inkblot; five are printed achromatic and five are in color. Figure 2 illustrates an inkblot similar to that employed in the Rorschach technique.

The subject (child or adult) is shown each inkblot, and asked to report on what the inkblot makes him think of and what it may mean to him. After the ten cards have been administered they are presented a second time. During this inquiry, the psychologist throughout the examinations records in detail the subject's responses (which include location of the blot, shape, color, shading, and content

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<sup>42</sup> Darrell H. Hart, Thomas J. Kehle, and Matthew V. Davies, "Effectiveness of Sentence Completion Techniques: A Review of the Hart Sentence Completion Test for Children," School Psychology Review, Vol. 12, No. 4 (Fall, 1983), p. 430.



Figure 2. A Sample of an Inkblot Similar to the Type Used in the Rorschach Technique.



of what was perceived). Hence, implicit in these dynamic intricacies are the assumptions that the subject's responses are indicative of his perceptual integration (Harrower and Steiner, 1973), and therefore provide a sort of x-ray of his personality structure. Notwithstanding the fact that the scoring and interpretation of these ambiguous stimuli is a long and complex task, and scored only by those clinicians who have undergone special training, the Rorschach has, since its introduction, received extensive clinical validation (Fantino and Reynolds, 1975).

The Thematic Apperception Test (TAT). Another projective technique of measuring the self-concept is the Thematic Apperception Test (TAT), which consists of thirty pictures and one blank card. Administration of this test is similar to that of the Rorschach. The subject is asked to tell who the characters are, what has happened to them before, what is happening at the time the picture was taken, and what the outcome will be. With the blank card, the subject is told to imagine some picture on the card, describe it, and tell a story about it. A typical card is shown in Figure 3.

Like the Rorschach, the TAT is an unstructured technique. The pictures are chosen to allow varied interpretation. That is, the contents of these stories are analyzed (e.g., who is the "hero," or character of either sex with whom the subject has presumably identified himself), and thus, to the trained clinician, reveals some of the drives.



Figure 3. A Sample of a Picture Used in the Thematic Apperception Test (TAT).

To simulate the test - Look carefully at the picture and make a short story about it: What is happening? What is the person thinking and feeling? What will happen in the future? Why? (Copyright © 1943 by the President and Fellows of Harvard College, © 1971 by Henry A. Murray. (Reprinted by permission of Harvard University Press)).

emotions, sentiments, conflicts, and complexities of the subject's self-concept. Unlike the Rorschach, however, the major analysis of the TAT is based on content of responses rather than formal aspects. As stated by contemporary apperceptive psychiatrists in the field, especially Bellak (1975), this particular technique, as well as the CAT (See Note 4), was developed with the concept that one's personality is revealed as the subject interprets ambiguous stimuli. Indeed, several studies have supported such hypotheses and as Obrzut and Cummings (1983) recently pointed out, some of the most widespread projective techniques used with children and adolescents are the thematic picture approaches.

The projectives reviewed above reflect only a small sample of the current state-of-the-art, yet they demonstrate their versatility as a whole. As evidenced in the literature, if properly administered, scored, and interpreted, projective tests can facilitate the diagnostic assessment/intervention process (Exner and Martin, 1983; Conti, 1983) and more significantly, tap some of the "hidden" deeper aspects of self-concept organization. As Cronbach (1949) puts it:

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Note 4. The Children's Apperception Test (CAT) was developed by Leopold and Sonya Bellak (1984) as a downward extension of the TAT, and is based on the theory that young children identify more readily with animals than with human figures.



Projective methods have special strengths which make them essential in modern research and applied psychology. They stress personality as an inter-related whole, rather than as a random mixture of isolated traits. They permit every person to have a different final analysis, corresponding to our knowledge that each person is unique. They tap forces which underlie overt behaviors and are otherwise not observable, and tendencies which will break forth under future stress though they are not yet apparent.<sup>43</sup>

And, from an educational perspective (thirty five years later), Knoff (1983), interestingly enough, states in conclusion:

...Projective tests, individually, continue to become more sophisticated, and they continue to add to the assessment process. There is no incompatibility between school psychology and the use of projective tests. They cannot be categorically dismissed.<sup>44</sup>

From the foregoing analyses of projective techniques, it is evident, therefore, that projective instruments, by design, attempt to explore the subject's "hidden" and/or "unconscious" imaginatory processes. As techniques for appraisal, these unstructured or ambiguous stimuli (e.g., drawing tasks, incomplete sentences, pictures, or inkblots) continue to add almost a limitless variety of provocative hypotheses concerning the self-concept. Although based

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<sup>43</sup> Lee J. Cronbach, Essentials of Psychological Testing (New York: Harper and Brothers, Publishers, 1949), p. 450.

<sup>44</sup> Howard M. Knoff, "Justifying Projective/Personality Assessment in School Psychology: A Response to Batsche and Peterson," School Psychology Review, Vol. 12, No. 4 (Fall, 1983), p. 451.

largely on impressions rather than empirical data, these instruments can provide meaningful information which, if used judiciously by responsible clinicians, can divulge a great deal about a subject that is obtainable in no other way. In this connection, Lindzey (1961) states it clearly this way:

A projective technique is an instrument that is considered especially sensitive to covert or unconscious aspects of behavior, it permits or encourages a wide variety of subject responses, is highly multidimensional, and it evokes unusually rich or profuse response data with a minimum of subject awareness concerning the purpose of the test. Further, it is very often true that the stimulus material presented by the projective test is ambiguous, interpreters of the test depend upon holistic analysis, the test evokes fantasy responses, and there are no correct or incorrect responses to the test.<sup>45</sup>

Self-Reports. In sharp contrast, when the self-concept is measured, objective instruments (referred to earlier as paper-and-pencil type tests) are, unequivocally, far more commonly used than projective devices because of their psychometric validity and practicality. Theoretically, as contrasted with projective techniques, both are invaluable, and equally so, but objective instruments (for many psychometric reasons) provide the most direct measures possible for describing the many "separate" facets of the child's self-concept.

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<sup>45</sup> Gardner Lindzey, Projective Techniques and Cross-Cultural Research (New York: Appleton-Century-Crofts, 1961), p. 45.

Aside from the view that objective techniques reveal psychological trends which cannot be gleaned from projective methods, other advantages cited by adherents of this approach are the facts that (1) they can be easily administered as a group test, or individually, and they can be readily scored (Gilbert, 1969; Helmstadter, 1970; Koppitz, 1982); (2) they can be scored without professional judgment or even expert decisions, and the raw scores can be unequivocally transformed into some variety of standard scores (which meet the requirements for statistical studies) (Hathaway, 1965; Bourisseau, 1972); and lastly, (3) many, if not hundreds, have been supported by extensive research on thousands of subjects (Buros, 1978; Lugo and Hershey, 1981).

In actual practice, there is, as previously mentioned, almost a limitless variety of self-rating instruments (also referred to by some as inventories) in which the various dimensions of the self-concept can be quantified and measured. While it is far beyond the scope of this study to outline in detail the ingenuity and/or technical test implications employed in all of these tests, a brief review of a few of the more widely used self-rating techniques (objective in conception) will be presented. For illustrative purposes, several techniques will be briefly described, but specific attention will be focused on the instrument used in this study, namely, the Piers-Harris Children's Self Concept Scale (P-HCSCS) (Piers and Harris, 1969).



The Minnesota Multiphasic Personality Inventory (MMPI).

The most famous and widely used objective self-report is the Minnesota Multiphasic Personality Inventory, known simply as the MMPI. As an objective measure of personality (strictly clinical in orientation), the application of this inventory has attained unprecedented proportions (Anastasi, 1961; Karmel and Karmel, 1978). Designed as an inventory to assay "traits" among older adolescents and adults, it is only one among many. Other well known similar inventories include the California Psychological Inventory (Gough, 1964), the Guilford-Zimmerman Temperament Survey (Guilford and Zimmerman, 1949), and the Gordon Personal Profile and Inventory (Gordon, 1958), to name just a few. Nevertheless, the MMPI attempts to provide, in a single comprehensive test, scores on all of the most important aspects of personality (Hathaway and McKinley, 1951). As a self-administered inventory, it consists of ten clinical scales of vital significance to the researcher:

Hypochondriasis (Hs), Depression (D), Hysteria (Hy), Psychopathic Deviate (Pd), Masculinity-Femininity (Mf), Paranoia (Pa), Psychasthenia (Pt), Schizophrenia (Sc), Hypomania (Ma), and Social Inversion (Si). Accordingly, the scale has 566 statements that the subject must judge as being "true" of himself, "false," or "cannot say." The items were selected after experimental studies determined which statements discriminate best between normal

individuals and psychiatric patients (Lana and Rosnow, 1972; Bourne and Ekstrand, 1976). For example, sample statements from a typical inventory may read as follows:

1. I have trouble making new friends.
2. I am worrrried about sex matters.
3. I often cross the street to avoid meeting people.
4. I believe I am being plotted against.
5. I am afraid of losing my mind.

Interestingly, in a study concerning psychopathology, Hare (1969) used this instrument to divide criminals into psychopathic and nonpsychopathic groups; the MMPI profiles of the two groups were then compared. Figure 4 illustrates the plotted profiles for these two subgroups. As evident, it is apparent that the two scales that differentiate best between pychopathic and non-psychopathic criminals are the Psychopathic (Pd) and Hypomania (Ma) scales. With reference to these findings, the former scale is a measure of the subject's feelings on laws, moral conduct, thics (e.g. "I have used alcohol excessively," etc.), while the latter scale measures how excited and active the subject is, particularly, his tendency to show elation and excitement (e.g., "Something exciting will always pull me out of it when I am feeling low, etc.). Moreover, as Figure 4 indicates, although the differences between most scales

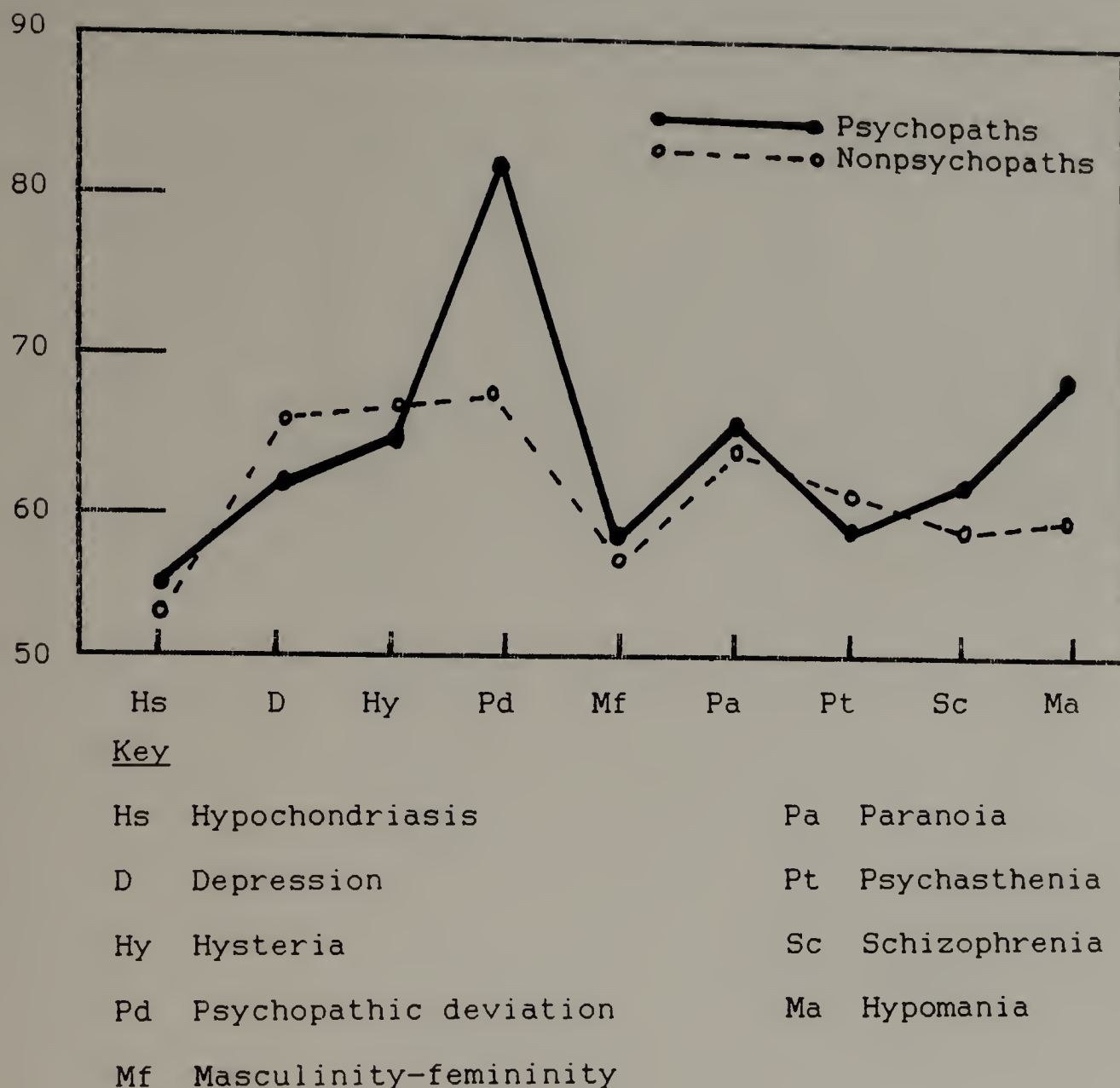


Figure 4. Mean MMPI Scores for 30 Psychopathic and 30 Nonpsychopathic Criminals.

The largest difference between the two groups appears on the Pd (Psychopathic Deviation) Scale. Source: Psychopathy: Theory and Research by Robert D. Hare, copyright © 1970. Reprinted by permission of John Wiley and Sons, Inc.



were not especially large, the overall results support the expected clinical impression that MMPI profiles (particularly with reference to the Psychopathic Deviate Scale) obtained by psychopathic groups, differ greatly from those obtained by normal subjects.

Thus, unlike projective tests, which ask the subject to apply his own perceptual structure to ambiguous stimuli the MMPI enables psychologists and/or researchers to make useful clinical discriminations by analyzing combinations or patterns of scores. From an operational perspective, most of the current empirically derived interpretive manuals for the MMPI suggest profile or pattern analysis of the test, rather than interpretation from single peaks (Nathan and Harris, 1975). Nevertheless, despite the fact that scoring and interpretation may yield, for a variety of reasons, both positive and false negatives, the MMPI continues to retain its position as the most widely used individual test in the armamentarium of the clinical psychologist. A typical MMPI profile is shown in Figure 5.

The Semantic Differential. A second method of assessing the self-concept is the Semantic Differential developed by Osgood (Osgood, Suci, and Tannenbaum, 1957). In brief, the Semantic Differential represents a standardized and quantified technique for measuring the meaning of concepts. Unlike the MMPI, which asks specific questions

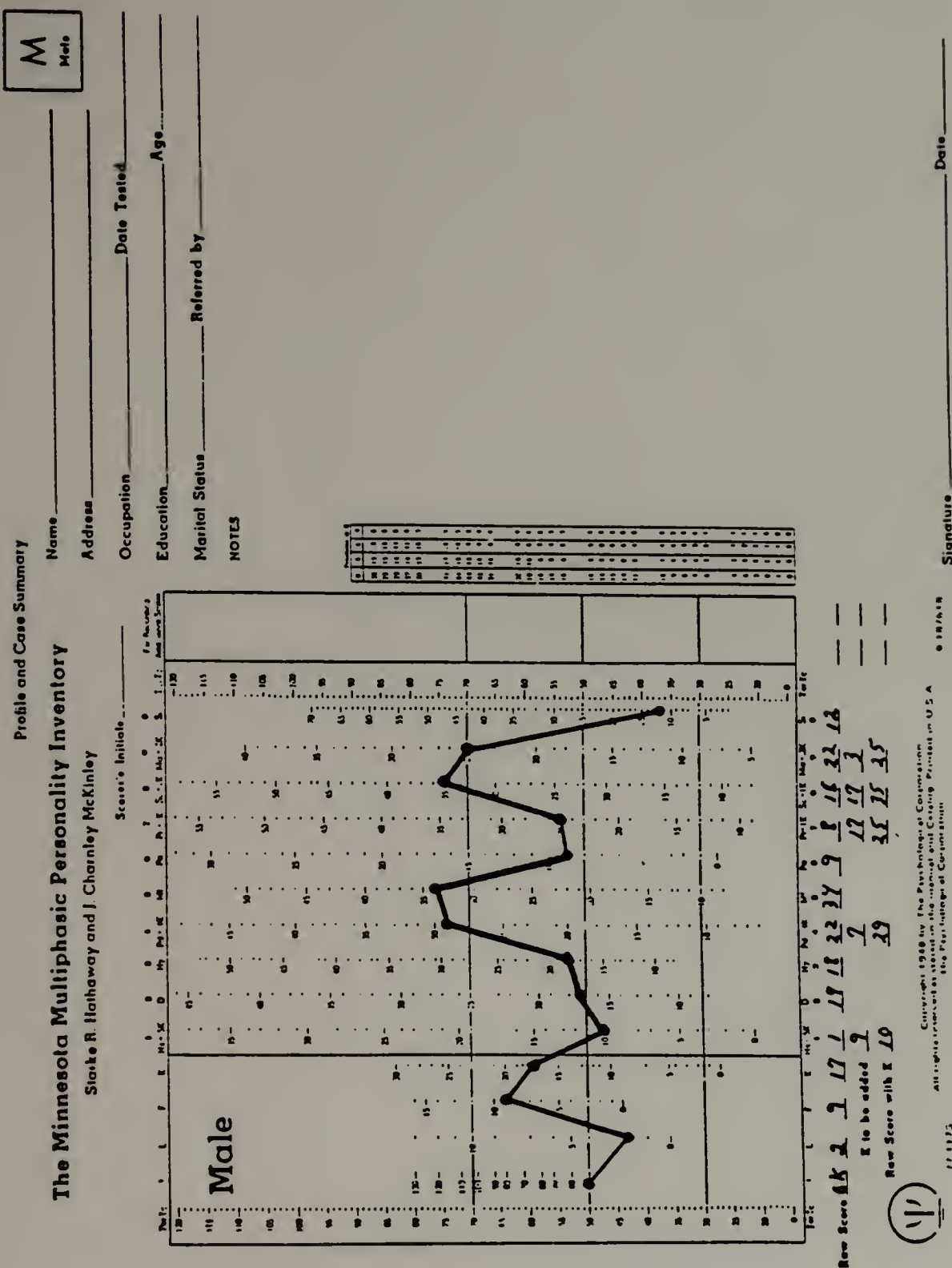


Figure 5. An Illustrative Example of the MMPI Profile.

The lines connecting the scores on the scales (vertical rows of numbers) constitute the "profile" - a pattern that helps the clinician see how the various scales relate to one another. Copyright © 1948 by the American Psychological Association. Reprinted by permission of the University of Minnesota Press.

that are to be answered true or false, the Semantic Differential consists of a pair of polar adjectives separated by a seven-point scale in which the subject is asked to determine where on the continuum between positive and negative poles he sees himself. Typical sample items that might be used to assess the self-concept are presented in Figure 6 (shown below) with abridged instructions.

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Instructions: For each pair of polar words (e.g., Happy Sad) shown below, place a check mark (X) on the dash that is most descriptive of the concept (e.g., self, educational program, teacher, etc.) that you are rating. There are no right or wrong answers. Mark only one check for each pair of words.

<u>Self</u>								<u>Total</u>	<u>X</u>
Happy	_____	_____	_____	_____	_____	_____	Sad	_____	_____
Good	_____	_____	_____	_____	_____	_____	Bad	_____	_____
Strong	_____	_____	_____	_____	_____	_____	Weak	_____	_____
Hard	_____	_____	_____	_____	_____	_____	Soft	_____	_____
Kind	_____	_____	_____	_____	_____	_____	Mean	_____	_____
Pretty	_____	_____	_____	_____	_____	_____	Ugly	_____	_____
	7	6	5	4	3	2	1		

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Figure 6. An Illustrative Example of the Semantic Differential.



From this example, it should be amply clear that the Semantic Differential is highly adaptive for purposes of assessing educational programs, teachers, or students themselves, and may be restricted only by the researcher's organizing capacity. Likewise, almost regardless of the polar adjectives being rated, scores can be easily culminated to obtain highly satisfactory quantitative descriptions of the child's global self-concept for most situations, both applied and research. Commenting on a rating scale approach, Mischel (1970) underlines this generally accepted belief as follows:

...Just as with any post hoc hypothesis, almost any data can be made to fit the hypothesis. Consistent with the preceding consideration, many verbal constructions or interpretations about behavior tend to be quite stable over time. For example, ratings of traits in people, and ratings of the semantic meanings of words and concepts, evoked by paper-and-pencil tests, tend to be enduring.<sup>46</sup>

Q-Sort Another empirically derived objective test for investigating the self-concept is the Q-Sort, developed by Stephenson (1953). Basically, in this technique, the procedure is to ask the subject to sort a large number of cards on which items descriptive of statements or trait names have been written. Usually, but not always, the

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<sup>46</sup> Walter Mischel, "Sex-Typing and Socialization," in Paul H. Mussen (Ed.), Carmichael's Manual of Child Psychology (Vol. 2, 3rd ed.; New York: John Wiley and Sons, 1970), p. 11.

subject is asked, for example, to sort 80 to 100 cards containing self descriptions (such as whole sentences, "I am thoughtful" or "I am a happy person," and single words, like shy, strong, failure, happy, etc.), into one of eleven piles, ranging from "most characteristic" to "least characteristic," according to how closely the description characterizes himself. In this sense, the Q-Sort is similar to a "forced-choice" approach. In other words, following a successive-category procedure, the Q-Sort yields "ipsative" rather than "normative" data. That is, depending on the information desired, the items can be designed to elicit specific categories of information about school, peer relationships or how the student perceives himself generally. Similarly, the subject can sort the items as they apply to his mother, father, educational program or social situations. In general, from these ratings (which include an equal number of positive and negative characteristics and a smaller number of items which are neutral), each subject's score is obtained as the summation of the products of the statement weight and the scale position (Helmstadter, 1970).

In practice, when properly carried out, the Q-Sort (although more complicated than the Semantic Differential) is a valuable and insightful aid for obtaining a comprehensive unbiased self description of the individual. Despite the disadvantage of the time involved in individual administration as well as the necessity of basic reading

skills, a unique feature of this self-concept test is the demonstrated moderate stability over time. Engel's (1959) research supports this point. Accordingly, she tested a group of adolescent sixth and eighth graders on the Q-Sort; then, after two years, repeated the same test. In general, she arrived at a correlation of .78 between her first and second measures. Interestingly enough, this reveals that even in the presumably unstable period of adolescence, perceived self descriptions tended to be moderately stable two years later. Nevertheless, within the framework of self-concept assessment, the Q-Sort technique in design, execution, and thoroughness, is a useful tool with many research advantages. Although recognizing its limitations, the author feels that if used by competent clinicians, this dynamic descriptive instrument can be a fruitful technique for the study of the self-concept. Obviously, unlike projective techniques that rely on the insight of the interpreter, Q-Sort responses are likely to be more effective and more lasting than those imposed by another's authority.

#### The Piers-Harris Children's Self concept Scale

(P-HCSCS) Finally, a fourth objective technique which has proven useful in self-concept assessment is the Piers-Harris Children's Self Concept Scale, subtitled The Way I Feel About Myself (Piers and Harris, 1969). Although of relatively recent origin, it has already been used in



hundreds of school systems and clinics, and as a major research instrument in many theses and dissertations as well as in many ongoing research programs (Piers, 1976). In point of fact, in regard to the recent edition of the Eighth Mental Measurements Yearbook (Buros, 1978), the instrument has been extensively researched and lists well over a hundred references. As the major instrument used in this study, the following is a technical descriptive review of the PHCSCS, for readers and/or researchers who are not already familiar with it.

Description. The P-HCSCS, subtitled The Way I Feel About Myself, is a relatively short, easily administered self-descriptive scale applicable for children in grades 3 through 12. The scale consists of 80 first-person declarative statements, some of which are associated with behavior and the school situation (e.g., "a perception of self as trustworthy or disobedient," "a perception of self in school,"); others that are regarded as more personal such as in the areas of physical appearance and anxiety (e.g., "a perception of self in regard to physical appearance," "a perception of self as being shy, worried, or nervous,"); and still others which deal with popularity and happiness (e.g., a perception of self in regard to peer acceptance, "a perception of self as being lucky, sad, or cheerful"). Accordingly, the declarative statements are grouped into six scales with almost half of the items worded to elicit

a positive self-concept and just over half to elicit a negative self-concept. A total positive self-concept score can be obtained, the latter from each of the six separate subscales. These subscales or Factors are: Factor I, Behavior; Factor II, Intellectual and School Status; Factor III, Physical Appearance and Attributes; Factor IV, Anxiety; Factor V, Popularity; and Factor VI, Happiness and Satisfaction. Designed primarily for research on children's attitudes and correlates of these attitudes (Piers, 1969), the P-HCSCS is viewed as one of the better validated instruments (Bentler, 1972; Robinson and Shaver, 1974; Wylie, 1974; Martinek and Zaichkowsky, 1977; Crandall, 1978), and appears to have no strong competitor.

Administration and Scoring. This scale can be administered to children individually or in groups, and takes an estimated 15 to 20 minutes to complete, depending on the age and reading ability of the subjects. Items can be read for subjects in the lower grades (or for those with reading deficits) or self administered to subjects in grades 7 through 12. The instrument is easy to administer, and respondents are asked to respond to each statement on a "yes" or "no" scale. The total positive self-concept score represents the number of items from the total positive set of 80 that are scored (directly on the test protocol) in a direction of a positive self-concept. The higher the score, the more positive the child's report on himself. Similarly,

for the variables of the six subscales, each clusterscore is a simple sum. Scoring is relatively straightforward with the aid of an overlay key which encircles the correct answers to the items. As the test manual makes explicit, the P-HCSCS was developed primarily for research, and this goal still remains its primary purpose (Piers, 1969).

Standardization. The norms were based on the performance of 1,183 subjects in grades 4 through 12 of one Pennsylvania public school district. Technical data show that the mean of the normative sample is 51.84 and the standard deviation is 13.87 (Piers, 1969). In addition, the manual gives raw scores, percentile rankings, and stanine scores (separately for the total positive scores) of the normative sample. As the author notes, average scores are considered to be between the 31st and 70th percentile or between raw scores of 46 to 60 (Piers, 1969). On the whole, while its supportive data is still developing, the P-HCSCS remains an objective phenomenological test with an extremely diverse and relatively sound literature, all of which adds to its versatility and power as a predictive self-concept instrument. It has good theoretical basis, adequate norms, adequate reliability, and moderate validity.

Structure. The structure of the 80 items that constitute the scale was investigated at the sixth grade level by means of a multiple-factor analysis (Piers, 1969). Ten factors were extracted and rotated by means of the



varimax method and accounted for 42 percent of the variance. Of these, the aforementioned six factors were considered large enough to be interpretable (Piers, 1969).

Reliability. The reliability of the total positive scores are acceptably high. Reliability statistics obtained on the original standardization sample of 95 items (for boys and girls in grades 3, 6, and 10) show internal consistencies (estimated by Kuder-Richardson<sub>21</sub> coefficients) ranging from .78 to .93. Moreover, reliability based on the split-half method (using the same original scale for half of grade 6 and grade 10 sample), show resulting coefficients (estimated by the Spearman Brown odd-even formula) of .90 and .87, respectively.

Stability. Test-retest reliability (after four months on one half the standardization sample), are reported as .72, .71, and .72. In another stability study (based on the current 80-item scale), concerning both a two-month and four-month time span, test-retest coefficients of .77 are reported for 244 fifth grade subjects (both boys and girls). The scale is thus judged to possess respectable internal consistency and adequate reliability.

Validity. Since the development of this scale in 1969, concurrent validity studies have been well documented, many of which are summarized in the test manual, in the form of correlations with various testing instruments. These include a .68 correlation with the Lipsett Children's Self

Concept Scale (Mayer, 1965); a  $-.64$  correlation with Big Problems on the SRA Junior Inventory (Cox, 1966); and, a  $.69$  correlation with the Children's Manifest Anxiety Scale (Millen, 1966).

Correlations with other tests (intelligence measures) have also been conducted. Eastman (1965), for example, in a comparative study of the P-HCSCS and the WISC, (based on a sample of 36 subjects in grades 5 and 6) found coefficients of correlations which ranged from  $.08$  to  $.28$  (Verbal Scale IQ:  $.28$ ; Performance Scale IQ:  $.08$ ; and, Full-Scale IQ:  $.23$ ). More pertinent to the present study, he also found significant and substantial correlations ( $.43$  and  $.50$ ) between Factor II of the Scale (Intellectual and School Status) and the WISC's Full-Scale and Verbal Scale. In addition, the same appreciable relationships between the P-HCSCS were reported in similar correlational studies ( $.06$  to  $.43$ ) conducted by one of the test authors (Piers, 1965).

Foreign Language Versions and Adaptations. The P-HCSCS has been translated into several languages (Hindi, Mikasuki, Portuguese, among others), and three Spanish (Mexican) versions exist (Piers, 1977). However, in spite of the various language modifications devoted to the P-HCSCS, none (to the best knowledge of this author) has been directed at deriving a Spanish version specifically conceptualized for Hispanic "Puerto Rican" children.

Pertinent to this investigation, then, this study represents the first attempt to modify the P-HCSCS with respect to a Hispanic Puerto Rican subgroup. As already suggested, given the substantial heterogeneity (lexical, syntactic, and phonological variations) between these two designated Hispanic subgroups, the researcher argues here that the adapted version developed herein fulfills an increasingly recognized local need, and provides still another Spanish version to help bridge the gap between the current state-of-the-art related to self-concept instrumentation and Hispanic Puerto Rican children, a need well recognized by the leading test author (Piers) as well as by the test publisher (See Note 5).

Finally, this review reflects only a few of the unique techniques employed to measure the various facets of the affective domain, and by implication, the two major approaches to self-concept assessment. While an in-depth review of the relative merits and disadvantages of these techniques is far beyond the scope of the study, suffice it to say that the use of rating scales have not diminished (Curtis and Shaver, 1981; Reynolds and Paget, 1983; Chandler and Lundahl, 1983; Quay, 1983; Epstein and Nieminen, 1983), and thus, continues to have a highly respected position in self-concept measurement.

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Note 5. Personal communication, December 1, 1980.



## The Wechsler Intelligence Scale for Children

Since its introduction, the Wechsler Intelligence Scale for Children (Wechsler, 1949), in both its original and revised versions, has become one of the best known and most frequently used measures of children's abilities to learn. As an individually administered intelligence test, it has been recognized as being a useful instrument for the prediction of school performance (Tarnopol, 1967; Martin, 1972; Payne and Mercer, 1975; Ebel, 1977), global intellectual functioning (Wechsler, 1971; Matarazzo, 1972; Hilgard, Atkinson, and Atkinson, 1975), disability diagnosis (Rabin, 1965; Vance and Singer, 1979; Schiff, Kaufman and Kaufman, 1981; Searls, 1985), and brain-behavior relationships (Karmel and Karmel, 1978; Sattler, 1982; Hartlage, 1982). This may be partially due to the availability of three IQ scores (Verbal, Performance, and Full-Scale), the variety of constructs it measures, and the sensitivity of the subtests. That is, in addition to its use as a single measure of general intelligence, the instrument lends itself to a variety of interpretative strategies. For example, in addition to its global measure (the Full-Scale IQ), the Wechsler Scale also indicates how a subject performs on verbal tasks, performance tasks, and on each separate subtest task. Indeed, since its publication in 1949, the WISC (and, more recently, its revision, the WISC-R)

continues to gain widespread acceptance in clinical, educational, and research applications. In fact, with a research base of over 5000 studies (The Psychological Corporation, 1987), and a continually growing data base that no other intelligence test can match, the Wechsler Scales continue to surpass all other instruments against which clinical measurement of intelligence is judged.

This second topic, then, begins with a technical review of the WISC (the second major instrument used in this study), then turns to a discussion of bilingualism and how it relates to intelligence test scores, continues with selected studies between Hispanic monolingual and bilingual children, and ends with contemporary issues related to profile analysis.

#### A Technical Description

History: Superseded in 1974, by its revised edition, the WISC-R, the original WISC was published in 1949. It is regarded as a downward extension of the Wechsler-Bellevue Intelligence Scale (Wechsler, 1949).

General Purpose: The WISC is designed to assess an individual's current level of intellectual functioning.

Test Assumptions: The WISC is based on Wechsler's (1949) conception of intelligence as a global capacity that can be inferred from a child's performance on a series of different tasks. This concept of intelligence puts an emphasis on the multifaceted nature of the intellect as a

composite of many abilities. No one ability (e.g., abstract reasoning, memory, etc.) is seen as more important than another; consequently, it is necessary to explore intelligence in different ways by using various different tasks.

Administration: The WISC is administered individually by a qualified psychologist. Twelve subtests are separated into six verbal and six nonverbal subtests which are administered in a prescribed order which involves alternating a verbal and nonverbal subtest. The manual is very clear and explicit regarding administering and scoring the items. The verbal subtests are administered orally and the subject's responses are recorded by the examiner. The performance subtests are timed, and on most, bonus points are allowed for speed. Total administration time ranges from about forty-five to seventy-five minutes for most children.

Standardization: The norms for the scale range from 5 years, 0 months through 15 years, 11 months.

Age: The standardization sample included 200 children in each of the eleven age groups, ranging from 5 years, 5 months to 15 years, 5 months of age, with a total sample of 2,200 cases.

Sex: The standardization sample included 100 boys and girls at each age level.

Sampling Technique: A stratified sampling technique was used to insure that the normative sample would include representative proportions of various classes of children.



The sample was very carefully selected, with the exception of race, to reflect the 1940 census population of the United States. The variables used were age, geographic region, occupation of head of household, and urban-rural residence.

Reliability: A split-half technique was used for all the subtests, except for the Digit Span, Coding, and Mazes Subtests. Each of the three IQ scales has a reliability coefficient of .92 or above in the standardization group (based on three age groups of 7.5 years, 10.5 years, and 13.5 years) covered by the scale. Average reliability coefficients are .93 for the Verbal Scale IQ, .88 for the Performance Scale IQ, and .94 for the Full-Scale IQ.

Subtest reliabilities, while adequate, range from a low of .50 for Digit Span to a high of .91 for Vocabulary. The average reliability coefficients range from .50 to .91 for the Verbal Scale subtests, and from .59 to .88 for the Performance Scale subtests. The reliability coefficients are similar, for the most part, across the three age groups. Only four coefficients in the entire table are below .60 and only one of them is .59.

Validity: The criterion validity of the WISC (or the WISC-R) has been investigated in a variety of studies by correlating it with the Wechsler Preschool and Primary Scale of Intelligence (WPPSI), the Wechsler Adult Intelligence Scale (WAIS), the Stanford-Binet Intelligence Scale (Form L-M, 1972 norms), the Illinois Test of Psycholinguistic

Abilities (ITPA), other intelligence tests, and measures of achievement and school grades. As expected, these studies vary, with the type of test used, the character of the population studied, and the range of intelligence level of subjects compared.

The correlation between the WISC-R Full-Scale IQ and the WPPSI Full-Scale is .82. Similar high correlations are found between the two Performance IQs and the two Verbal IQs. The correlation between subtests yield coefficients from .18 to .70. These figures were based on a sample of 50 subjects, ages six years zero months (+/- 8 weeks).

The correlation between the WISC-R and WAIS Full-Scale IQs is .95, the correlation between the Verbal IQs is .96, and the correlation between the two Performance IQs is .83.

The correlation coefficients of scaled scores and IQs on the WISC-R with the Stanford-Binet IQs were obtained for four groups of normal children, ages 6, 9.5, 12.5, and 16.5 years. The four groups included approximately an equal number of boys and girls as well as eighteen to twenty-five percent non-whites. The subjects were drawn from five occupational groups and each age group included children from urban and rural areas. The average coefficients of correlation of the WISC-R Verbal, Performance, and Full-Scale IQs with the Stanford-Binet IQ were .71, .60, and .73, respectively.

In an interesting study of the WISC and the ITPA, Pielstick and Thorndike (1976) found two significant canonical correlations, .84 and .69. Their study indicated that the WISC Information, Similarities, and Vocabulary subtests are most highly related to the composites of the ITPA, having communalities of .32, .31, .44, and .49. These figures were based on a sample of 71 subjects.

Adaptations: The Puerto Rican Version of the WISC: The Escala de Inteligencia Wechsler para Niños (EIWN) (Roca, 1951) is a Puerto Rican translation and adaptation of the WISC (Wechsler, 1949) which does not have separate norms. The original order of presentation of questions on the WISC was altered based on studies of the order of item difficulty for Puerto Rican children, and the content of certain items was changed. However, the distribution curve on the EIWN was not a normal one. The mean IQ is 88.01 and the median is 97.94. The standard deviation is 21.60. Thus, the Puerto Rican IQ is approximately 12 points lower than the American one.

This discrepancy between the Puerto Rican WISC and the American WISC scales (mean Puerto Rican WISC: 88, SD: 22; Mean American WISC: 100, SD: 15) poses serious problems in interpreting the Puerto Rican child's performance on this test. That is, one cannot simply add 12 points to the scale. This would be inappropriate, since the scale is not a linear one.



A formula and conversion table developed by Moran (1974) is available to convert the Full-Scale Puerto Rican score to the American equivalent. However, Moran makes it very clear that the formula was based on the assumption that the Puerto Rican norms were obtained from a sample having a normal distribution of IQ scores. Since the actual sample size was only 128 and had a standard deviation of 21.6, it is very unlikely that the IQs obtained met this assumption. Thus, it is clear that even with the conversion tables, there is uncertainty as to what the earned IQ score is and how it should be used.

Organization of the Scale: The WISC is divided into two sections, a Verbal Scale and a Performance Scale, each having five required subtests and one subtest usable as a supplement or an alternate. The subtests are as follows:

<u>Verbal Tests</u>	<u>Performance Tests</u>
1. Information	7. Picture Completion
2. Comprehension	8. Picture Arrangement
3. Arithmetic (timed)	9. Block Design
4. Similarities	10. Object Assembly
5. Vocabulary	11. Coding
6. Digit Span*	12. Mazes*

\* Supplementary Tests

The WISC provides three IQ scores: a Verbal Scale IQ, a Performance Scale IQ, and a Full-Scale IQ, the latter derived from the sum of the scaled scores for the first two. Thus, a subject's IQ can be calculated for the test as a whole or for the verbal items or performance items considered separately. Following is a detailed breakdown of the WISC IQ Scales as well as the twelve subtests:

I. Full-Scale: The Full-Scale IQ (sum of the Verbal and Performance IQ's) summarizes the overall performance on the WISC, and provides a broad assessment of general intelligence and the ability to do well in school. It is, at best, only an approximation and the least valuable to the educator.

II. Verbal: The Verbal IQ is generally based on the sum of the first five of the six Verbal subtests. It provides an index of a child's verbal comprehension, including the ability to use verbal skills in reasoning and solving problems, and the capacity to learn verbal material. The verbal subtests may be described as follows:

Information: This subtest consists of thirty questions concerning a wide variety of facts. The items are intended to tap the child's fund of general knowledge. As seen by Glasser and Zimmerman (1967), subjects who do well on this subtest generally are alert to the environment and have good long-term memory for facts.

Comprehension: This subtest is composed of fourteen problem questions concerning one's ability to organize and apply knowledge for making practical judgments in everyday social actions.

Arithmetic: This subtest contains sixteen problems of the kind that would be typically encountered in elementary school. Both speed and correctness of response are scored.

Similarities: This subtest of sixteen pairs of terms calls for the ability to describe how things are alike. It is a measure of one's ability to analyze abstract relationships at a verbal level.

Vocabulary: This subtest consists of forty words to be defined. It is a measure of word meanings.

Digit Span: This subtest consists of two parts. From three to nine digits are read to the subject and he is asked to repeat them in their exact order. In the second part of the test, the subject is asked to repeat them backwards. It measures attention and concentration. This is a supplementary subtest and not used in scoring the IQ.

III. Performance: The Performance IQ is generally based on the sum of the first five of the six Performance subtests. It assesses the efficiency and integrity of the child's perceptual organization, including nonverbal reasoning skills, the ability to employ visual images in thinking, and the ability to process visual material. The Performance subtests may be described as follows:



**Picture Completion:** This subtest consists of twenty pictures, each of which has an important item missing to be identified. The subject is shown the pictures one at a time (within a fifteen second time frame) and asked to identify the missing item in each. Such factors as visual alertness and perceptual awareness are measured in this task.

**Picture Arrangement:** This subtest is made up of eleven different cut-up pictures, which when placed side by side in the proper order tell a story. The subject is handed a set of pictures and asked to arrange them in an appropriate order that tells a logical story of actions or consequences. Such factors as social awareness, visual sequencing, planning ability, perception and visual motor control are among some of the aspects measured in this task. Both speed and accuracy are scored.

**Block Design:** This subtest contains ten two-dimensional abstract designs to be reproduced with multi-colored (red and white) blocks. This task requires the subject to arrange blocks (painted differently on the six sides) to form a pattern identical to that shown on a printed card. Such factors as the ability to perceive and analyze patterns, visual-motor coordination, and logic and reasoning applied to space relationships are among some of the aspects measured in this task. Both speed and accuracy are scored.

**Object Assembly:** This subtest consists of four cut-up (jigsaw) picture puzzles to be assembled, each of a single

common object. The subject is asked to assemble them, one at a time. Such factors as a sense of space relations, simple assembly skills, visual motor coordination, and persistence are some of the aspects measured in this subtest. Both speed and accuracy are scored.

Coding: This subtest requires the child to match and copy symbols in blank spaces provided on the test protocol, using a guide of symbols associated with simple shapes. The subject is provided with the test protocol on which nine different symbols are paired with nine numbers. Further down from this guide, a random list of numbers is given, and the subject is asked to write in (with pencil) the matching symbols. Such factors as visual motor dexterity, eye-hand coordination, and visual perception are measured in this subtest. Both speed and accuracy are scored.

Mazes: This subtest consists of eight mazes, presented one at a time. The subject is provided with a pencil and asked to draw a line from the center of the maze to the exit. Such factors as visual motor coordination, perceptual organization, and planning and foresight are thought be some of the aspects measured in this subtest. Both speed and accuracy are scored. This a supplementary subtest and not used in scoring the IQ.

Scores and Deviation IQ's: Five subtests each are used to determine the Verbal and Performance IQ's. A total of ten subtests are used to determine the Full-Scale IQ (the

latter derived from the sum of the ten scaled scores for the first two). That is, raw scores on each subtest are converted into "scaled scores." These "scaled scores" (or standard scores) have a mean of 10 and a standard deviation of 3, and they are added together to provide three IQ's: Verbal, Performance, and Full-Scale. The Verbal and Performance IQ's are added together to provide the Full-Scale IQ. All three IQ's are deviation IQ's, which are obtained by comparing one child's scores with the scores earned by others of the same age. Because deviation IQ's are standard scores, the average IQ's and standard deviations at each age level are equal. Accordingly, each of the three IQ's have a mean of 100 and a standard deviation of 15 (Wechsler, 1949).

Reporting of Scores: Aside from the many details of completing the assessment, such as recording and scoring the responses, assigning bonus points, tallying the number of correct points, computing the subject's chronological age, etc., raw scores are converted to scaled scores and scaled scores to IQ's, and recorded on the front cover page of the WISC Record Form.

A copy of the front cover page of the WISC-R is shown in Figure 7. As can be seen, this graphical representation illustrates a typical test profile and how the scores are summed to yield IQ's.



# WISC-R

## RECORD FORM

Wechsler Intelligence Scale  
for Children—Revised

NAME \_\_\_\_\_ AGE \_\_\_\_\_ SEX \_\_\_\_\_

ADDRESS \_\_\_\_\_

PARENT'S NAME \_\_\_\_\_

SCHOOL \_\_\_\_\_ GRADE \_\_\_\_\_

PLACE OF TESTING \_\_\_\_\_ TESTED BY \_\_\_\_\_

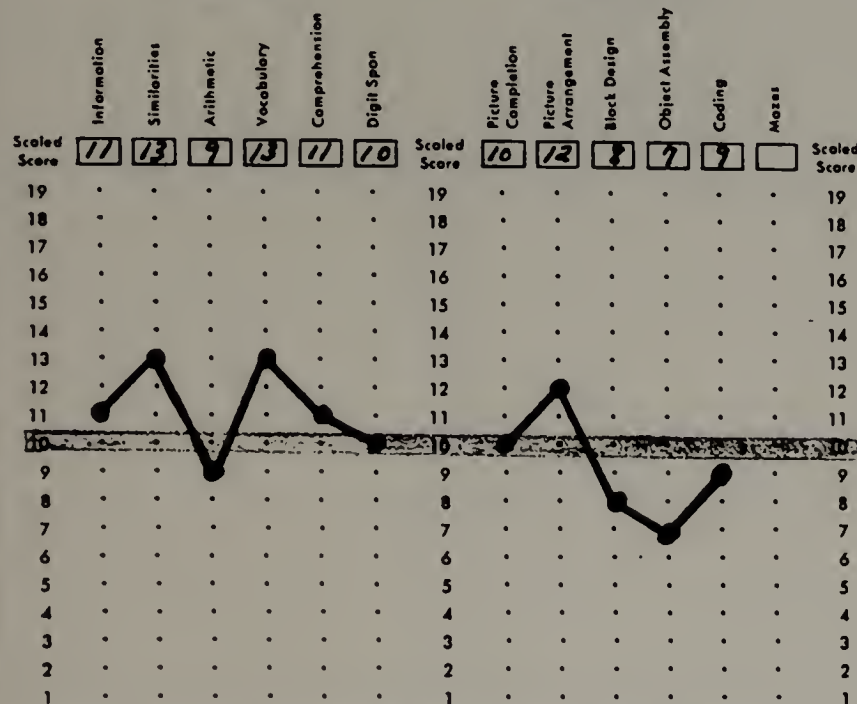
REFERRED BY \_\_\_\_\_

### WISC-R PROFILE

Clinicians who wish to draw a profile should first transfer the child's scaled scores to the row of boxes below. Then mark an X on the dot corresponding to the scaled score for each test, and draw a line connecting the X's.\*

#### VERBAL TESTS

#### PERFORMANCE TESTS



\*See Chapter 4 in the manual for a discussion of the significance of differences between scores on the tests.

#### NOTES

	Year	Month	Day
Date Tested	87	6	30
Date of Birth	77	2	28
Age	8	4	2

	Raw Score	Scaled Score
<b>VERBAL TESTS</b>		
Information	12	11
Similarities	14	13
Arithmetic	9	9
Vocabulary	29	13
Comprehension	14	11
(Digit Span)	(10)	(10)
<b>Verbal Score</b>		57
<b>PERFORMANCE TESTS</b>		
Picture Completion	16	10
Picture Arrangement	27	12
Block Design	11	8
Object Assembly	12	7
Coding	30	9
(Mozes)	( )	( )
<b>Performance Score</b>		46

	Scaled Score	IQ
Verbal Score	57	108
Performance Score	46	93
Full Scale Score	103	101

\*Prorated from 4 tests, if necessary.



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The Psychological Corporation, New York, N.Y. 10017

74-103AS 9-990334

Figure 7. Cover Page of the WISC-R Record Booklet.

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Diagnostic and Clinical Features: In comprehensive and scholarly reviews of the diagnostic use of intelligence tests, Glasser and Zimmerman (1967) and Ogdon (1982), among numerous others, have brought together considerable evidence to show that almost from the very year of the publication of the WISC (now four decades old) psychologists began to use this test to obtain a wealth of "diagnostic" information far above and beyond the IQ score. The Wechsler Scales are more than subtests that produce a psychometric IQ; important as that may be, they also prove useful in evaluating personality characteristics and organic brain damage. It has been found, for example, that in the majority of organic brain disorders (such as, congenital brain anomalies, degenerative and cerebrovascular disease, and traumatic head injuries, to name a few) impairment of functioning, with few exceptions, is greater in the Performance section than in the Verbal area. In fact, differences between Verbal and Performance IQ's of fifteen points or more in either direction is considered significant (Wechsler, 1958; Matarazzo, 1972). To illustrate:

Organic Brain Damage: Children who are brain-damaged, with few exceptions, consistently do better on Verbal than on Performance tests. Psychometrically, these children show the three most conspicuous signs of organic brain disease: large discrepancy between Verbal and Performance IQ's in favor of the former and poor scores on Digit Span

combined with even lower scores on Block Design.

Diagnostically, as often noted, a poor score on Block Design is indicative of disturbances in the visual-motor spheres (Wechsler, 1958; Gilbert, 1969).

Schizophrenia: For schizophrenia (See Note 6), Wechsler lists the following signs: Verbal IQ higher than Performance IQ, high Information and Vocabulary, average to superior Digit Span and Block Design, average to poor Arithmetic, and low Object Assembly and Coding. Clinically, one should note, however, that the pattern of test scores is more variable for the schizophrenic than for any other clinical group. Some schizophrenic individuals do well on one or several of the tests that are failed by the typical schizophrenic. These irregular scores are typical only in that they are of adult subjects who manifest most or many of the signs characteristic of the schizophrenic group as a whole (Wechsler, 1958).

Anxiety Disorders: In practice, children who suffer from anxiety disorders (whether it be cognitive, affective, somatic or motor), usually reveal themselves by apprehension, tension, or uneasiness. Psychometrically, these children show the following signs: a large discrepancy

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Note 6. Schizophrenia is a general term that refers to a related groups of psychotic disorders, all characterized by a loss of touch with reality. The classical divisions are: (1) simple, (2) hebephrenic, (3) catatonic, and (4) paranoid.



between Verbal and Performance IQ's, in favor of the former, and poor scores on Arithmetic, Digit Span, and Coding. Diagnostically, as often noted, considerable research both empirical (Wechsler, 1958; Lutey, 1977) and theoretical, (Karmel and Karmel, 1978; Ogdon, 1982) report overwhelming evidence that these latter subtests are more vulnerable to anxiety than any other subtests on the Wechsler Scales.

Sociopaths: The diagnostic term of sociopath (what DSM III now calls an antisocial personality disorder) applies to individuals who have no sense of responsibility or morality and no concern or affection for others; their behavior is determined almost entirely by their own needs. That is, they are frequently in conflict with society, profit little from experience or punishment, and maintain no real loyalties to any person, group, or code; in short, they lack a conscience. Their test performance is characterized by the following signs: large discrepancy between Verbal and Performance, in favor of the latter, relatively low scores on Information, Vocabulary and Similarities, and relatively good scores on Picture Arrangement and Object Assembly (Schafer, 1948; Wechsler, 1958; Gilbert, (1969).

All in all, the WISC has few, if any, test peers. It is a proven research tool - not difficult to administer, easy to score, and informative. In point of fact, it is one of the most valuable tools in the assessment of children's intelligence (Cronbach, 1949; Glasser and Zimmerman, 1967;

Kaufman and Payne, 1975; Karmel and Karmel, 1978; Sattler, 1982; Kaufman, 1982). As Tarnopol (1967) puts it:

It will be observed that almost all of the recommended test batteries use the Wechsler Intelligence Scale for Children (WISC) rather than the older Stanford-Binet Intelligence test. This is because the Verbal and Performance IQ scores plus the twelve subtest scores which the WISC provides have been found very useful for diagnostic purposes.<sup>47</sup>

Taking a slightly different perspective, the author now turns to an admittedly all too brief review of the research literature which deals with bilingualism and intelligence testing. The major concern here will not be with the studies that deal specifically with the Spanish WISC (which are rare to come by) or with the studies that deal specifically with Puerto Rican children (equally as rare), but with the others that attempt to investigate the effects of bilingualism on intelligence, especially among Hispanic (See Note 7) children.

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<sup>47</sup> Lester Tarnopol, Testing the Educationally Handicapped Child, Reprint No. 139 (San Rafael, Ca.: Academic Therapy Quarterly, 1967), p. 5.

Note 7. As is clear from a detailed examination of the relevant literature, most of the research in the area of psychoeducational assessment of the Hispanic has been done with Mexican-Americans. Although the author makes clear that not all Hispanics are a homogeneous population, he assumes that many of the considerations relevant to Mexican-American children will also be relevant to Puerto Rican children.

## Bilingualism and Intelligence Testing

A substantial segment of the estimated nineteen million Americans of Spanish-speaking origin in the United States (including some 11 million Mexican-Americans and 2 million Puerto Ricans), is of school age. For the sake of brevity—and at the risk of oversimplifying – paradoxically, all of them do not speak Spanish. Some speak only Spanish, others only English, and many speak both languages. Despite these differences, Spanish-speaking children have faced certain general difficulties in their search for equal educational opportunities. As Rodriguez (1975) pointed out:

To consider the Spanish-speaking a homogenous group with a given set of characteristics and qualities is to stereotype. In focusing on education in the United States, the term Spanish-speaking is more accurate than any other, including Spanish-surname, for the basic elements of educational difficulties are language and culture.<sup>48</sup>

Recognition of these difficulties is reflected in the growing controversy over the standardized testing of Spanish speaking children. What is questioned is the methodology of standardized testing itself, particularly, the conclusions and consequences of the analysis of test results. As Lennan (1970) wrote:

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<sup>48</sup> Armando Rodriguez, "Education for the Spanish-Speaking: Mañana in Motion," in Earl J. Olgetree and David Garcia (Eds.), Education of the Spanish-Speaking Urban Child: A Book of Readings (Springfield, Ill.: Charles C. Thomas, 1975), p. 259.



There is a deep-seated conviction that the performance of poor Black, Puerto Rican, Mexican-American or just poverty-stricken examinees on these tests will be relatively poor; that because of this poor performance, inferences will be made as to the ability of these examinees, which inferences will lead to treatment, either in schools or jobs, that will in effect constitute a denial of opportunity.

And he further remarked:

The discussion has moved off the pages of educational and psychological journals onto the pages of mass media. Its forum has moved from the classroom and the psychological laboratory to City Hall and the courtroom. The tone of the discourse has become strident and emotional. The matter of bias and relevancy of test results has become political and central to a great many other concerns in the entire civil rights movement.<sup>49</sup>

In short, while criticism of testing, especially IQ testing, by social, political, and psychological commentators spans six decades, the courts began to examine the use of nondiscriminatory assessment only in the past two. In part, this recent interest by the law may be explained by the federal government's involvement through the passage of the Bilingual Education Act, (P. L. 90-247) which brought to the fore a flurry of legislative mandates concerning assessment issues which have been lying dormant for several decades. As a result, since the late 1960's, there has been an explosion of litigation and legislation affecting the

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<sup>49</sup> Roger T. Lennon, "Testing: The Question of Bias," in T.J. Fitzgibbon (Ed.), Evaluation in the Inner City (New York: Harcourt, Brace and World, 1970), pp. 42-43.

administration, interpretation, and use of psychological tests with Spanish-speaking children.

It is against this volatile background that a federal district court in California decided Diana v. State Board of Education (1970), the first case in which a court directly ventured into the turgid waters of the bilingual testing controversy. The central issue concerned the disproportionate number of Mexican-American children misplaced in classes for the "mentally-retarded," all of whom had been placed there on the basis of English language IQ tests. Settled out of court in favor of the plaintiffs, the court's ruling required that:

1. Children are to be tested in their primary language. Interpreters may be used when a bilingual examiner is not available.
2. Mexican-American children and Chinese children in classes for the educable mentally retarded are to be retested and evaluated.
3. The state will undertake immediate efforts to develop and standardize an appropriate IQ test.
4. Special efforts are to be extended to aid misplaced children readjust to a regular classroom.

As a result of Diana, the United States Department of Health, Education and Welfare's Office for Civil Rights issued a memorandum that informed the districts that they would be in noncompliance of Title VI of the Civil Rights Act if students whose primary language was other than

English were assigned to classes for the mentally retarded on the basis of tests which measured the use of English language skills (Theimer and Rupiper, 1975). The directive of this memorandum follows:

Where inability to speak and understand the English language excludes national origin minority group children from effective participation in the educational program offered by a school district, the district must take affirmative steps to rectify the language deficiency in order to open its instructional programs to these students.<sup>50</sup>

Similarly, the resolution of Diana was instrumental in resolving another major class action suit, namely, Guadalupe v. Tempe Elementary School District (1972), filed on behalf of Mexican-American and Yaqui Indian children in Arizona who allegedly were wrongly placed in special educational classes on the basis of intelligence tests written and administered in English. Like Diana, while the inappropriate use of tests was important to the deliberation of the case (also settled out of court, on January 1972), the federal court here agreed to a stipulated agreement that children could not be placed in special educational classes unless they scored two standard deviations below the population mean on an improved IQ test administered in the child's primary language. Further, this court also stipulated that other assessment techniques must be used in addition to

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<sup>50</sup> May 25, 1970, Memorandum of the Department of Health, Education and Welfare, 35 Fed. Reg. 11595, (July 18, 1970).



intelligence tests and that parental permission must be obtained for such placements (Theimer and Rupiper, 1975; Oakland and Loasa, 1977; Sattler, 1982).

A similar case against the state of California is Ruiz v. State Board of Education (1971). This suit, brought on by several Mexican-American children, challenged the use of IQ's in their educational evaluation. The complaint sought relief in the form of prevention of group IQ's in school records. An injunction was sought to prevent the use of intelligence tests in the determination of allocation of funds.

In February 1971, another significant class action suit, Covarrubias v. San Diego Unified School District, was filed on behalf of several black and Mexican-American children in California who allegedly were inappropriately assigned and retained in classes for the mentally retarded. Specifically, the plaintiffs argued that the placement procedures of the defendant school district violated the Civil Rights Act of 1871 and their right to equal protection as set forth in the California Constitution and the Fourteenth Amendment of the U.S. Constitution.

Thus, framed in this manner, the legal importance of this case was that the federal court was now faced squarely with the issue of the constitutionality of individual psychological testing when used for placement for the retarded in those situations when it adversely affects

racial minorities. Nevertheless, unique in this case, the plaintiffs asked for money damages and sought an injunction to prohibit the continuation of special education classes in San Diego until appropriate testing instruments were devised and correctly administered.

More importantly, both prior to and at the same time that the High Courts were considering all of these cases (such as, Diana, Arreola, Guadalupe, Covarrubias, among others) another line of litigation (such as, United States v. State of Texas (1972), Aspira of New York, Inc. v. New York Board of Education (1972), and Serna v. Portales Municipal Schools (1973), among others) was focusing their efforts on establishing bilingual educational programs for language minority children. From the standpoint of legal history, by far, the most important case in this direction is Lau et al. v. Nichols et al., 414 US 563 (1974).

This is, without question, the most judicial bench mark case par excellence in the field of bilingual education (Teitlebaum and Hiller, 1977; Molina, 1978; Sibelman, 1978; Fernandez and Guskin, 1978; Baca and Cervantes, 1984). The case, brought on by 1,800 Chinese-speaking students, squarely presented the issue of whether non-English-speaking students receive an equal educational opportunity when instructed in a language they could not understand.

The absence of special language programs designed to meet the linguistic needs of these students, they claimed,

violated the equal protection clause of the Fourteenth Amendment and Title VI of the Civil Rights Act of 1964.

On January 21, 1974, the United States Supreme Court agreed with the plaintiffs, and ruled that the actions of the defendant school district violated Title VI of the Civil Rights Act. The Court reasoned as follows:

...there is no equality of treatment merely by providing students with the same facilities, textbooks, teachers and curriculum; for students who do not understand English are effectively foreclosed from any meaningful education...

We know that those who do not understand English are certain to find their classroom experiences wholly incomprehensible and in no way meaningful...

It seems obvious that the Chinese-speaking minority receives less benefits than the English-speaking majority from respondents' school system which denies them a meaningful opportunity to participate in the educational programs—all earmarks of the discrimination banned by the [HEW] Regulations.<sup>51</sup>

In effect, this landmark ruling is significant because it represents the first Supreme Court law protecting the rights of non-English-speaking children to educational programs for linguistic-minority students. The important stipulation of this case, based on Title VI guidelines, is that the schools must demonstrate affirmatively that the educational program proffered whatever it may be will be equally effective in providing equal educational opportunity. The impact of Lau

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<sup>51</sup> Lau et al. v. Nichols et al., 414 US Pp. 563-572; 39 L. Ed 2d 1, 94 S. Ct. 786 (January 21, 1974), p. 564.



on the public schools, on subsequent legislation, and on the courts, has been, and still is, very significant as well as controversial (Oakland and Laosa, 1977; Sibelman, 1978; Molina, 1978; Gonzalez, 1978; Bell, 1982; Baca and Cervantes, 1984). According to Teitelbaum and Hiller (1977), this case raised the nation's consciousness of the need for bilingual education, and in doing so, encouraged both federal and state legislation, motivated enforcement efforts (known as the Lau remedies) through the U.S. Office of Civil Rights, and set the foundation for a number of additional lawsuits.

In addition to these court cases, another significant activity strengthening the legal rights of limited English-speaking children was that by the legislative and executive branches of the federal government. Notable in this direction is the Vocational Rehabilitation Act of 1973, P. L. 93-112, which makes clear the specific intent of Congress with regard to handicapped individuals, including children of school age. Section 504 of this Act is of particular importance:

No otherwise qualified handicapped individual in the United States ... shall, solely by reason of his (sic) handicap, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving federal financial assistance.<sup>52</sup>

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<sup>52</sup> U.S. Congress, Public Law 93-112, Vocational Rehabilitation Act of 1973, Section 504, July 26, 1973.

Patterned after Title VI of the Civil Rights Act of 1964 (which forbids discrimination on the basis of race, color, and national origin) and Title XI (which forbids discrimination on the basis of sex) this section thus represents the first federal civil law protecting the rights of handicapped children in any educational program benefitting from federal financial assistance (Abeson, 1976; Bersoff, 1982). Thus, any agency or organization, public or private, receiving federal monies for any program or activity whatsoever is bound by its statutory mandates. More specifically, since the Vocational Rehabilitation Act is a federal law, it supercedes any state law or state regulation.

By contrast, another significant occurrence has been the passage and implementation of P.L. 94-142, the Education for All Handicapped Children Act of 1975. This is the most significant piece of legislation passed on behalf of exceptional children to date (Mayer, 1976; Watson, 1977; Baca, 1980; Vensel, 1981; Kramer and Peters, 1985).

Through this landmark legislation (passed on November 29, 1975) the law establishes the right to education for all persons, including handicapped children, stipulating that school districts must provide procedures for insuring that handicapped children (as well as their parents or guardians) are guaranteed procedural safeguards in decisions regarding identification, evaluation and educational placement.

These procedural safeguards include but are not limited to the following:

1. Extensive child identification procedures.
2. Guarantee of due process procedures and parental involvement in the placement process.
3. Assurance of full service with a detailed timetable.
4. Regular parent or guardian consultation.
5. Assurance that special education is being provided for all handicapped children in each child's least restrictive environment, that is, with a regular classroom as much as possible.
6. Assurance of non-discriminatory testing procedures.
7. Policies and procedures that guarantee and protect confidentiality of child data and information.
8. Maintenance of an individualized educational program for each handicapped child.
9. Provision and guarantee of a free, appropriate public education at no cost to parents or guardians.
10. Maintenance of programs and procedures for comprehensive personnel development, including in-service programs.

Nevertheless, the attempts on the part of psychologists to comply with these recent court decisions have been varied, confused, and at times, even conflicting (Madden, 1980; Kicklighter and Bailey, 1980; Reschley, 1980; Bardon, 1980; Duffey, et al., 1981). That is, although the bitter controversy over intelligence testing, and particularly standardized testing, is likely to continue through the Federal Courts, political arena's, and educational circles,



the dilemmas (as well as the paradoxes) surrounding these issues are complex ones indeed. As Cardon (1975) says:

We are increasingly finding ourselves in what appear to be "no win," double bind situations. Take, for instance, the clash of the state mandated classification role of the school psychologist with court decisions which seem to be in contradiction. We are damned if we classify and damned if we don't, at least that's the way it appears to many of us.<sup>53</sup>

Hobbs (1975) expresses the same sentiment:

Children who are categorized and labeled as different may be permanently stigmatized, rejected by adults and other children, and excluded from opportunities essential for their full and healthy development. Yet categorization is necessary to open doors to opportunity: To get help for a child, to write legislation, to appropriate funds, to design service programs, to evaluate outcomes, to conduct research, even to communicate about the problems of the exceptional child.<sup>54</sup>

While P. L. 94-142 is a giant step forward in the cause of the handicapped child, mandating full service goals, due process safeguards, nondiscriminatory testing, evaluation procedures, and individualized educational plans, the complexities of assessment - to mention nothing of the various assessment methods - is extremely controversial. In point

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<sup>53</sup> Bartell W. Cardon, "Law, Professional Practice, and University Preparation: Where Do We Go From Here?" in Bartell Cardon, Peter Kuriloff, and Beeman Phillips (Eds.), Law and the School Psychologist: Challenge and Opportunity, A Special Issue of the Journal of School Psychology, Vol. 13 No. 4 (Winter, 1975), p. 383.

<sup>54</sup> Nicholas Hobbs, The Futures of Children (San Francisco: Jossey-Bass, 1975), p. 3.

of fact, one of the most bitter and least understood issues that has grown in intensity is that of standardized testing, with proponents on each side assuming that their stance is correct.

On the one side, some professionals claim that standardized tests are biased and unfair to individuals from ethnic, linguistic, and low socioeconomic groups, since most tests do not reflect the cognitive styles, experiences, or educational interests of these groups.

That is, it has been variously claimed that most standardized tests (a) are highly loaded with white, middle class values and experiences (Laosa, 1977); (b) penalize children with linguistic styles differing from that of the majority culture (Perrone, 1977); (c) sample cognitive styles directly opposed to those found in isolated rural areas (Mercer, 1977), low-income families (Samuda, 1975), or culturally diverse groups (Gonzalez, 1974; Bernal, 1977; Hilliard, 1980); (d) are often administered in an atmosphere that may penalize culturally diverse children (referring specifically to situational factors in examiner characteristics, naturally occurring pupil's characteristics, examiner-examinee interaction, etc.). (Adler, 1968; Schwartz and Flanagan, 1971; Hersh, 1971; Jacobs and DeGraff, 1973); (e) are often misused and misinterpreted by inept and poorly trained personnel (Jones, 1976), and, (f) are scored based on standard norms derived from predominantly white, middle

class standardization groups (Drew, 1973; Bailey and Harbin, 1980).

Baca and Cervantes (1984) point this out in their discussion of the testing controversy as follows:

This bitter controversy has directly involved standardized tests, particularly the interpretation placed on scores obtained by culturally, linguistically, or ethnically different children. At the center of the controversy over testing procedures is the concern that because of lower scores obtained by minority group members, incorrect inferences will be made as to the abilities of these individuals and their educational, technical, and vocational opportunities will be significantly denied.<sup>55</sup>

On the other side, other professionals claim that standardized intelligence tests (and other ability tests) are not biased to individuals from ethnic, linguistic, and low socioeconomic groups, since they provide valuable data about their strengths and weaknesses as defined by the majority culture. These professionals stress the view that a useful standardization sample is drawn from different regions of the United States and is stratified by age, sex, socioeconomic status, and racial-ethnic children are represented in the same proportion as that in which these groups appear in society. Supporters of this view feel that all current versions of the more popular testing instruments (e.g., the Stanford-Binet, WPPSI, WISC-R, WAIS, etc.) have

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<sup>55</sup> Leonard M. Baca and Hermes T. Cervantes, The Bilingual Special Education Interface (St. Louis, Mo.: Times Mirror/Mosby, 1984), p. 149.



used excellent sampling procedures to obtain their standardization populations, and thus, ethnic minority children are represented in each of the norm groups in proportion to their representation in society as a whole (Sattler, 1982).

On this side of the argument, Tucker (1977) referring specifically to intelligence tests, stated that:

We cannot wait for that magical test that will be non-biased or culture fair - administrable in any language and equally valid for all children regardless of age, sex, social class, or racial-ethnic origin. Such a test measuring significant behaviors will never be produced....We need to be proactive in finding solutions to the problems largely by utilizing properly the resources currently available.<sup>56</sup>

Similarly, Karmel and Karmel (1978) wrote as follows:

If IQ tests and other data help the school to understand each individual (as an overwhelming number of studies show), then certain inferences must be made. These inferences are drawn from an interpretation of the test results. If the test data do not discriminate between individuals, teachers or guidance counselors cannot make inferences, nor can they help the individual student.<sup>57</sup>

While these concerns of and for minorities about the shortcomings of psychological tests cannot be taken lightly, proponents believe that tests, if used carefully and

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<sup>56</sup> James A. Tucker, "Operationalizing the Diagnostic-Intervention Process," in Thomas Oakland (Ed.), Psychological and Educational Assessment of Minority Children (New York: Brunner/Mazel, 1977), pp. 91-92.

<sup>57</sup> Louis J. Karmel and Marilyn O. Karmel, Measurement and Evaluation in the Schools (2nd ed.; New York: Macmillan, 1978), p. 51.

cautiously, can provide a wealth of valuable information in the delivery of services to school-age children (Joselyn, 1975; Smith, 1977; Resnick, 1981; Lutey and Copeland, 1982). Some of the most prominent arguments for the use of intelligence testing are: (a) tests are useful for classification and prediction purposes (Telford and Sawrey, 1972; Oakland and Matuszek, 1977); (b) tests serve to discover abilities and disabilities (hidden or otherwise) (Payne and Mercer, 1975; Anastasi, 1976; Ogdon, 1982; Ysseldyke and Mirken, 1982); (c) tests serve a useful purpose by providing valuable cognitive information, such as psychomotor speed, graphomotor functions, attention and memory, abstract reasoning, etc., that cannot be easily obtained by other means (Gilbert, 1969; Kirk and Kirk, 1975; Obrzut, 1981; Ewing-Cobbs and Fletcher, 1987); (d) tests serve a useful purpose by identifying children for special enrichment programs and needed services (Down, 1979; Duffey, et al., 1981; Lieberman, 1982; Sattler, 1982); (e) tests are useful by revealing the outcomes of different instructional procedures or different curricular arrangements (Reynolds, 1975; Ebel, 1977; Prell and Prell, 1986); and (f) tests are useful in the fields of scientific experimentation (Matarazzo, 1972; Hartlage, 1982) and research (Glasser and Zimmerman, 1967; Kaufman, 1979; Mishra, 1980; Searls, 1985). On the professional front, Nazzaro (1979) stresses this point as follows:

Without systematic assessment it is impossible to make sound educational decisions. First, assessment data are used to determine whether a student is eligible to receive special education. Second, assessment information is gathered to describe a student's present skills and abilities so that an appropriate educational program, based on that data, can be described. Third, periodic evaluation is done to find out how well a student is moving through his or her specifically designed individualized program.<sup>58</sup>

Anastasi (1976) expresses much the same view in this way:

Intelligence tests - and any other test - may be regarded as a map on which the individual's present position can be located. When combined with information about his experiential background, test scores should facilitate effective planning for the optimal development of the individual.<sup>59</sup>

In essence, then, the issues and consequences surrounding the use of psychological testing with bilingual children do not lend themselves to easy resolution. At present, the arguments in favor of one position to another range from the emotional to the empirical, and the final judgement of these procedures will probably be a long time in coming. In any case, it is at this juncture that the intelligence test (or any other test) is seen for what it is worth. It is neither fair nor unfair, perfect or imperfect, but only a tool - a tool to help sort out those who need

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<sup>58</sup> Jean Nazzaro, Assessment of Minority Children, Fact Sheet (Reston, Va.: The Council for Exceptional Children, 1979), p. 1.

<sup>59</sup> Anne Anastasi, Psychological Testing (4th ed.; New York: Macmillan, 1976) p. 61.



educational guidance and those who do not. As Wesman (1972) stated:

You don't cure malnutrition by throwing out the scale that identifies babies who are under-weight. You don't win a war by killing the messenger who brings news of defeat in a skirmish. If tests reveal that the disadvantaged have been deprived of opportunities to learn fundamental concepts, the remedy is to provide those opportunities-not do away with the source of information.

To make tests the scapegoat for the ills of the disadvantaged is not only unfair to test publishers and authors, it is unfair to a society that needs to know and grow.<sup>60</sup>

Similarly, Wechsler (1966) observed:

The I.Q. has had a long life and will probably withstand the latest assaults on it. The most discouraging thing about them is not that they are without merit, but that they are directed against the wrong target. It is true that the results of intelligence tests, and of others too, are unfair to the disadvantaged, deprived and various minority groups but it is not the I.Q. that has made them so. The culprits are poor housing, broken homes, a lack of basic opportunities, etc., etc. If the various pressure groups succeed in eliminating these problems, the I.Q.'s of the disadvantaged will take care of themselves.<sup>61</sup>

All in all, a review of the research reveals linguistic, cultural, and psychological difficulties for Spanish-speaking children on standardized intelligence tests.

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<sup>60</sup> Alexander G. Wesman, "Testing and Counseling: Fact and Fancy," Measurement and Evaluation in Guidance 5 (November, 1972), p. 401.

<sup>61</sup> David Wechsler, "The IQ is an Intelligent Test," The New York Times Magazine (June 26, 1966), p. 66.

Whether testing bilingual children will remain highlighted by litigation and legislation as seen by the present courts or whether, through a flash of insight, some new procedure will be developed remains to be seen; one fact is certain - testing, formal and standardized is an integral part of the educational process, and indications are that it will remain so. As Sumuda (1975) puts it:

We will need to expand our research endeavors so that psychometric technology becomes the tool of educational innovation to optimize the individual's competence through qualitative analysis of school achievement and the causes and areas of weakness. For the only rational purpose for testing should be that we seek to make better the instruction provided for all students and especially for those who need special attention to their individual styles of learning. Through such a philosophy of testing we may achieve some significant reduction in the unfairness of the social and educational system and widen the possibility of educational opportunity.<sup>62</sup>

Against this background, then, the following section of this study will be devoted to an examination of some of the comparative intelligence studies conducted with Hispanic (Mexican-American and Puerto Rican) children. The topics to be covered are: (1) comparative studies; (2) IQ Tests: Spanish v. English; (3) IQ Studies: Spanish-speaking v. English speaking; (4) IQ Tests: English only; (5) IQ Tests: Translated Versions; and (6) IQ Tests: Verbal and Nonverbal.

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<sup>62</sup> Ronald J. Samuda, "Problems and Issues in Assessment of Minority Group Children," in Reginald L. Jones (Ed.), Mainstreaming and the Minority Child (Reston, Va.: The Council for Exceptional Children, 1976), p. 74.

### Comparative Studies

The issue of alleged differences in intelligence between monolingual and bilingual children has been a topic for many research studies (Myers and Goldstein, 1979; Perez, 1980). The general trend in the literature seems to suggest that Spanish-speaking children (Mexican-American and Puerto Rican, mostly) tested on the WISC are likely to score significantly higher on the Performance than on the Verbal Scale (Altus, 1953; Talerico and Brown, 1963; Fitch, 1966; Bransford, 1966; Phillipus, 1967; Christiansen and Livermore, 1970; Gerkin, 1978). In reviewing the literature in this area, however, it becomes clear that the results of these studies, and others like them, are contradictory.

They appear to be contaminated by several factors, including (1) nature of the Spanish translated test: the more similar the translation to the language spoken by the subjects, the more likely they will do better on the Spanish version; (2) social class variables: effects on subjects of impoverished backgrounds may have greater negative influence than the bilingualism; (3) intelligence variables: subjects of lower intelligence appearing to benefit more from the Spanish WISC; and (4) language effect: subjects exposed to English for the longest time tend to perform better on the English version (Keston and Jiménez, 1954; Vogler, 1968; Chandler and Plakos, 1969; Palmer and Gaffney, 1972; Hickey, 1972; and Moran, 1974).



IQ Tests: Spanish v. English. Several studies, which revealed that the language of the IQ test significantly affects the scores for Spanish-speaking children, found that Hispanic children (Mexican-American and Puerto Rican, mostly) attained considerably higher scores on the Wechsler Intelligence Scale for Children (WISC) in Spanish than in English (Roca, 1955; Fitch, 1966; Moran, 1974).

In contrast to this methodology, especially as it pertains to the failure to use Spanish language testing instruments, are the findings of a comparative study by Galvan (1967).

The children selected for this study were 100 Mexican-American children from the third, fourth, and fifth grades of a Dallas, Texas elementary school. These students were chosen primarily on the basis of their heredity background with the study being restricted to only those children born of Spanish-American parentage in which the primary language spoken at home was Spanish. The Wechsler Intelligence Scale for Children (WISC) was utilized, and Verbal, Performance, and Full-Scale IQ scores in both English and Spanish were derived for each student.

The major analysis reached in this study showed that the Mexican-American children scored better on the WISC when administered in Spanish than when administered in English, with the verbal section reflecting a greater increase in points than the non-verbal or performance section.

The following are Galvan's<sup>63</sup> findings, the first of which are the mean scores, by sex:

	<u>N</u>	<u>Mean age in years</u>	<u>Mean Score English Full-Scale IQ</u>	<u>Mean Score Spanish Full-Scale IQ</u>
Boys	50	9.38	87.80	99.20
Girls	50	9.51	92.48	104.84
Total	100	9.44	90.14	102.02

The distribution of all the intelligence scores by IQ group was as follows:

<u>IQ Range</u>		<u>English WISC</u>	<u>Spanish WISC</u>
130+	Very Superior	-	2
120-129	Superior	-	5
110-119	Bright Normal	1	15
90-109	Average	57	60
80-89	Dull Normal	28	11
70-79	Borderline	11	5
69-Below	Mentally Defective	3	2

According to Galvan (1967), he concluded that verbal tests do not provide the most effective way of evaluating bilingual children's cognitive skills.

A somewhat similar study was made by Chandler and Plakos (1969) in Sacramento, California. They studied the placement of 47 Spanish-speaking children in classes for the

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<sup>63</sup> Robert Rodgers Galvan, Bilingualism as It Relates to Intelligence Test Scores and School Achievement Among Culturally-Deprived Spanish-American Children (Doctoral Dissertation, East Texas State University, 1967), pp. 36, 38.

educable mentally retarded. English and Spanish versions of the WISC were used. Scores by IQ groups were as follows<sup>64</sup>:

<u>IQ Scores</u>	<u>English WISC</u>	<u>Spanish WISC</u>
100+	--	2
90-99	--	6
80-89	3	19
70-79	22	16
Below 70	22	4

An especially interesting aspect of this study were the higher scores on the Spanish WISC as the bilingual children involved were originally classified as retarded. In contrast, for this reason, the researchers acknowledged that some children have spent as long as three years in a "special" class and as such may not have acquired the same advantages as children with comparable IQ's in regular classes; the "special" placement may have been a retarding factor (Chandler and Plakos, 1969).

IQ Studies: Spanish-speaking v. English-speaking. Of methodological interest in this area of comparative research is the study by Bransford (1966) in New Mexico and Colorado. In general, this study compared the intelligence test scores of 60 bilingual Spanish-speaking students attending special educational classes in Santa Fe, New Mexico with 34 non-bilingual English-speaking students attending special

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<sup>64</sup> John T. Chandler and John Plakos, "Spanish-Speaking Pupils Classified as Educable Mentally Retarded," Integrated Education, 7 (November, 1969), p. 30.



educational classes in Greeley, Colorado. The major conclusions were: (1) Spanish-speaking bilinguals scored significantly higher on the WISC Performance Scale than on the Verbal Scale when compared to English-speaking pupils from similar socioeconomic backgrounds; (2) the difference between Verbal and Performance scores of the bilinguals tended to increase as age increased: this was not found to be true for the control group; and (3) the disparity between Verbal and Performance scores became greater for older age levels than younger age levels; this difference was not found for the control group (Bransford, 1967).

Christiansen and Livermore (1970) studied the comparative intelligence test scores of lower and middle class Spanish-American children with lower and middle class Anglo-American children. Their subjects were 92 bilingual and nonbilingual children from the ages of 13 to 14 attending regular public school classes. In general, they found Anglo-American pupils to significantly surpass Mexican-American pupils with respect to two verbal factors (Verbal Comprehension and Relevance), but not with respect to two nonverbal factors (Perceptual Organization and Freedom from Distractibility). They reported that a consistently significant factor in the WISC performance of both Anglo and Mexican-American students was socioeconomic status (SES). That is, general intelligence and the development of verbal abilities are related to ethnic origin and social class.

IQ Tests: English Only. Further indications of the contradictory findings regarding the effects of bilingualism on intelligence can be found in studies conducted solely in English. That is, some investigators utilizing individually administered intelligence tests often evaluated children in English only (Darcy, 1946; 1952; Altus, 1953; Anastasi and de Jesus, 1953; Roca, 1955; Kittell, 1963; Christiansen and Livermore, 1970; Karadenes, 1971).

In general, the bulk of these studies (many of which have V-P IQ discrepancies of substantial magnitude in favor of the latter scale) support the conclusion that bilingual children perform much better on nonverbal measures than verbal measures administered in English. Altus (1953), for example, found that the average WISC verbal score of Anglo-American children significantly surpassed that of Mexican-American children, but their respective nonverbal WISC scores did not differ substantially. In point of fact, the average difference in Verbal IQ's was nearly 17 points in favor of the former group, with the most striking discrepancies found on Vocabulary, Information, and Similarities, in that order. Nevertheless, these findings are consistent with previous findings, that bilingual children are at a disadvantage on verbal tests but perform equally well on nonverbal tests when compared to monolingual children.

IQ Tests: Translated Versions. The complexities of testing bilingual/bicultural children can be further seen in studies conducted with translated instruments. Anastasi and Cordova (1953), for example, found no significant differences in IQ scores between Puerto Rican junior high school students tested with the aid of directions translated into Spanish and those tested entirely in English. Similarly, other theorists confirmed these results; that is, there is no difference in IQ scores due to language in which the test was administered. (Keston and Jiménez, 1954; Swanson and DeBlassie, 1971; Hickey, 1972; Palmer and Graffney, 1972).

In general, these findings suggest that bilingualism alone might not depress IQ scores, but this variable combined with low socioeconomic status, lack of test sophistication, age of subjects and poor emotional adjustment to the school situation seemed to be responsible for the low scores. This, of course, suggests that different age groups and social classes also have different cognitive styles which affect IQ scores. In this regard, these studies are at best inconclusive and confounded with variables which have not yet received systematic investigation.

IQ Tests: Verbal v. Nonverbal. Further indications of the vexing problems of IQ tests for Spanish-speaking children can be seen in studies exploring their results on verbal and nonverbal measures. Such studies reveal



differential results between Anglo and Spanish-American children. Altus' (1953) earlier study is an example in itself. After testing a group of Anglo and Mexican-American children equated on the basis of age, sex, and Performance IQ, she found that the average verbal score of the monolingual group significantly surpassed that of the bilingual group, but their respective nonverbal scores did not differ significantly. Myers' and Goldstein's (1979) study also showed differential effects on IQ on standardized tests between Anglo and Spanish-speaking children. They administered both the Peabody Picture Vocabulary Test (the Peabody) and the Raven's Coloured Progressive Matrices Test (the Raven) to a sample of 101 Anglo and Puerto Rican kindergartners, third, and sixth graders. They found that the Anglo subjects consistently surpassed the Puerto Rican subjects on verbal measures (the Peabody), but that there were no significant differences between the scores of the two groups on nonverbal measures (the Raven). The same pattern emerged in Bransford's (1966) comparative study of 94 Anglo and Mexican-American special educational students on the verbal and performance sections of the WISC.

On a broader scale, Darcy (1952) studied the performance of 235 bilingual Puerto Rican children attending grades five and six in the New York City public schools. Two group intelligence tests were administered: 1, the Pinter General Ability, Verbal Series, Intermediate Test,

Form B; and 2, the Pinter General Ability Test, Non-Language Series, Form K. As predicted, she found that the bilingual subjects scored significantly higher on the non-language test. For this reason, Darcy (1952) concluded that the administration of both verbal and non-verbal intelligence tests will yield a more valid picture of the intelligence of a bilingual population than either kind alone. This, of course, suggests that verbal IQ tests (or subtests) obscure an adequate assessment of the intellectual functioning of Spanish-speaking children.

These findings are consistent with previous findings that bilingual children are at a disadvantage on verbal tests but perform equally on non-verbal tests when compared to monolingual children of similar socioeconomic status (Christiansen and Livermore, 1970; Valencia, 1979; Oplesch and Genshaft, 1981).

In any event, although the number of studies in this area is still very limited, particularly with respect to Puerto Rican children, it is clear that the extent to which these differences are to be attributed to linguistic factors (bilingualism) rather than to experiential factors (particularly intelligence) remain largely unknown. As any practitioner will acknowledge, the former is as complex and puzzling a notion as the latter, and just as resistant to easy solution.

## Profile Analysis as Expressed in the Weschler Scales

[s]tandardized testing is a valuable tool in research that attempts to provide answers to educational questions. Testing, by its very nature, is wedded to research and an ongoing appraisal of what is and what may be.<sup>65</sup>

The purpose and the application of intelligence tests have expanded in scope over the years. As the research by Wechsler (1958), Glasser and Zimmerman (1967), Matarazzo (1972), Vance, Wallbrown, and Blaha (1978), Kaufman (1979), Swerdlik and Wilson (1979), Roffe and Bryant (1979), Lutey and Copeland (1982), Ogdon (1982), Paget (1982) makes clear, this expansion has been reflected in a general trend away from a limited focus on the global IQ score to a broader perspective on the various subtests of the major intelligence tests. This wider focus (technically referred to as profile analysis) involves the study of the irregular performance between Verbal and Performance IQ's as well as the irregular performance (or test scatter) between subtest scores.

In this connection, the author now turns to a brief review of the research concerned with profile analysis, for from the starting point, it will be possible to discuss the diagnostic studies relative to psychometric scatter analysis.

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<sup>65</sup> Karmel and Karmel, op cit., p. 18.



## Profile Analysis

The three basic levels of analyzing the WISC (or WISC-R) are as follows:

Level I: The Full-Scale IQ. The Full Scale IQ summarizes overall performance on the WISC (or WISC-R), and provides a global assessment of the child's level of cognitive ability. It is the major numerical index of the child's intelligence.

Level II: Verbal and Performance IQ's. The second level focuses on the Verbal and Performance IQ's and the extent to which there are significant discrepancies between the two scales. Wechsler (1958) suggests 15 points as a useful index diagnostically. This discrepancy, of course can be in either direction - performance greater than verbal and vice versa. As far as the scales are concerned, while the Verbal Scale provides input about verbal comprehension skills, the Performance Scale reflects organization skills.

Level III: Intersubtest Scatter. This level focuses on deviations of the various subtests from the mean of the Verbal Scale or Performance Scale and comparisons between subtests. From a psychometric approach, valuable insights about strengths and weaknesses can be generated from these analyses. That is, if an in-depth analysis of the strengths and weaknesses of the subtest scores is used and related to academic tasks, a pattern of strong and weak learning modes

(characteristic of peaks and valleys in the profile) can be predicted; the weaker dimensions can be better isolated, and specific areas of learning through strengths identified.

### Scatter Analysis

As has been suggested earlier, if each subtest of the WISC or (WISC-R) measures a different mental ability, an interpretation of the "profile" (scatter) should be very informative. In very broad terms, there are two basically different procedures of interpreting the profile. The first, and perhaps the oldest and the one most commonly used is that of scatter (or pattern) analysis. This consists of the graphic representation of comparable test scores in which the "high" and "low" scores indicate "high" and "low" test performance (or variant of scatter) on the tests in question. This procedure requires no assumptions about the configuration of the test profile (scatter) or the logical validity of the individual tests. The investigator simply inspects the profile for peaks and valleys to determine whether a child is more adept in one area or skill than in another. From a strict psychometric point of view, this procedure is of direct value to psychologists and educators for generating relevant prescriptive programming. That is, profiles with peaks and valleys (scatter) can identify special strengths and weaknesses, and provide some valuable cues about the child's cognitive and/or learning style.

A second procedure to which the term pattern analysis has been applied is one in which the subtest scores are not treated separately but statistically analyzed into a hoped-for discriminating total. Measures of scaled score ranges, subtest differences, and factor analysis all belong to this category. In brief, the intent here is to find a "pattern" or formula for identifying diagnostically different groups, and hopefully the individuals composing them, on the basis of the theoretical constructs presumably tapped by specific subtests. Implicit in all such procedures is the assumption that subtests scores can be combined into and identified as unique combinations. While it is clear that these patterns are open to considerable question, particularly with regard to discriminating one diagnostic group from another, their usefulness for hypotheses about the intellectual functioning of children is undeniable.

### Theory

From a psychometric point of view, the theory of profile analysis is based on the hypothesis that to fully comprehend a child's ability spectrum and learning potential, the three IQ's must be interpreted in the context of (and in conjunction with) the subtest profile. For example, the most frequent WISC pattern identified for bilingual Spanish-speaking children (and other bilingual children as well) is that in which the Performance IQ is significantly higher than the Verbal IQ. That is, for these children, the



Verbal IQ often falls into the mentally deficient range while the Performance IQ is in the normal or above range. In this pattern, it is obvious that the Full-Scale IQ score (and hence the one quoted) is virtually meaningless as a indication of overall intelligence, as it is a composite of these two extremely variant dimensions of intellectual functioning. Furthermore, as any school psychologist will acknowledge, a half-dozen children, (bilingual or otherwise) may have the same Full-Scale IQ score, yet each may have an entirely different profile.

For this reason alone, then, the philosophy and logic that underlies the art of profile analysis is a trend away from the use of the intelligent quotient to a more knowledgeable analysis of subtest patterns in identifying weak and strong learning modes. As Kaufman (1976) so aptly points out:

[w]hen a child has an unusual amount of scatter in his WISC-R profile, there may be diagnostic and remedial implications. When there is some scatter (e.g., one or more deviant test scores), but not an abnormal amount, then the focus should be primarily - perhaps solely - on gaining a better understanding of the child's abilities and/or planning for his remediation. What must be remembered, in the final analysis, is that the normal child - just like the exceptional child - does not have a flat WISC-R profile, and will often evidence relative strengths and weaknesses when his test scores are subjected to empirical analysis.<sup>66</sup>

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<sup>66</sup> Alan S. Kaufman, "A New Approach to the Interpretation of Test Scatter on the WISC-R," Journal of Learning Disabilities, Vol. 9, No. 3 (March, 1976), p. 167.

### Characteristic Profiles

The never-ending search for characteristic profiles in groups of exceptional children has revealed some intriguing consistencies for children with school-related problems (Keogh and Hall, 1974; Rudel and Denckla, 1976; Smith, 1978; Gutkin, 1979; Fuller and Goh, 1981). In studies of the WISC, investigations are relatively consistent in reporting that educable mentally retarded children tend to score relatively well on Picture Completion, Object Assembly, and Block Design, and poorly on Information, Arithmetic, and Vocabulary (Kaufman and Van Hagen, 1977; Silverstein, 1968). By way of contrast, reading disabled children tend to score as well on the same three subtests as the former group of children, but characteristically score low on four subtests: Arithmetic, Coding, Information, and Digit Span (Rugel, 1974; Johnson and Wollersheim, 1977; Milich and Loney, 1979). These latter four subtests (which form the acronym ACID) have also proved particularly difficult for various groups of learning disabled children (Gilbert, 1969; Ackerman, Dykman, and Peters, 1976; Lutey, 1977; Sattler, 1982).

In any event, since the revised WISC (WISC-R) remains structurally and contextually the same as that of its predecessor, research findings found in the WISC literature applies as well to the WISC-R.

The concluding section of this chapter will be devoted to an examination of a few of the research studies concerned with subtest patterns. In this regard, the reader will gain a better perspective for understanding the general features of profile analysis, and will also get a "feel" for the trends of thought and the directions in which psychology and psychometrics seem to be moving at the present time.

### Studies in Subtest Patterns

In comprehensive and scholarly historical reviews of the diagnostic use of intelligence tests, an impressive number of researchers and clinicians (Schafer, 1948; Rabin, 1965; Gilbert, 1969; Glasser and Zimmerman, 1967; Bush and Mattson, 1973; to name just a few) have brought together considerable evidence to indicate that almost from the very year of the introduction of the WISC, psychologists began to use this tool to obtain considerably more information than a single IQ score. Indeed, in the past four decades, profile analysis, looking for "high" and "low" scores on individual subtests, was the technique most reported. These techniques, confirmed by the revised and restandardized WISC-R, remain the focus of an impressive array of research investigations. This sphere of research on the WISC and WISC-R is summarized by referring to several research findings in the literature. These studies are discussed individually.



### WISC Patterns

Huelsman (1970) reviewed a substantial body of research to determine if there was a characteristic WISC subtest profile for disabled readers. He found that the WISC pattern for disabled readers included low scores on the Arithmetic subtest (100% of studies reviewed), Coding (95%), Information (80%), and Digit Span (60%). The subtests most consistently higher were Block Design, Picture Completion, and Picture Arrangement. Accordingly, Huelsman labeled this pattern the "WISC syndrome for disabled readers."

In a similar study, Searls (1972) summarized results of reviewing 33 studies of such investigations, and found that Arithmetic was low in 91% of the studies, Coding in 76%, Information in 65%, and Digit Span in 62%. According to this study, the author concluded that in spite of the differences among the studies in procedure, design, size of sample, and characteristics of the sample (e.g., age, grade level, sex, bilingualism, socioeconomic level and degree of reading retardation), the WISC disabled reader syndrome was well established in the literature.

### Recategorization of WISC Subtests

For purposes of identifying children with genetic dyslexia, Bannatyne (1968) suggested the recategorization of WISC subtest scores into Spatial, Conceptual, and Sequential Categories. This is a departure from the usual practice of analyzing WISC Verbal Scale-Performance Scale differences.

Based on his clinical experiences, he suggested that the WISC subtest scores of genetic dyslexic readers are best analyzed in terms of the following categories:

1. Spatial: Picture Completion, Block Design, and Object Assembly.
2. Conceptual: Comprehension, Similarities, and Vocabulary.
3. Sequential: Digit Span, Picture Arrangement, and Coding.

According to Bannatyne (1968), the suggested tripartite groups of subtests possessed more psychological meaning than the Verbal and Performance Scales. Interestingly, Bannatyne (1971) found that children with genetic dyslexia scored highest in the Spatial Category (sum of the scaled scores for each subtest in the category), average in the Conceptual category, and lowest in the Sequential Category.

A second study related to the above methodology is that of Rugel (1974), who conducted the first large-scale study of Bannatyne's recategorization of WISC subtests. From a review of 25 published and unpublished WISC studies with disabled readers, Rugel revealed 22 populations for which the subtest scores could be recategorized. An interesting finding in this research is the study-by-study consistency in the subtests that emerged as "easy" (Picture Arrangement, Picture Completion, and Object Assembly) or "hard" (Coding, Arithmetic, and Digit Span) among populations of normal and disabled readers. Rugel (1974)

concluded that disabled readers as a whole show the same profile of abilities that Bannatyne (1971) found for genetic dyslexics.

Klatskin, et al., (1972) attempted to assess whether a diagnosis of minimal organicity based on the WISC and Bender-Gestalt would correlate with a diagnosis based on soft neurological signs, and whether psychological test patterns would discriminate between children identified as minimally damaged and those not so identified. Fifty subjects, age 7 to 12 years, of average intelligence and without central nervous system pathology, were examined. The psychological tests were administered by a psychologist and the children were examined by a neurologist. They reported agreement between the two independent examinations in 43 cases. As far as the WISC is concerned, the suspect group tended to score lower on the Performance than on the Verbal Scale. Specifically, subjects identified as minimally impaired did less well on the Coding subtest and on a Perceptual Organization Factor. In 21 out of 25 cases, their Bender age (Koppitz norms) was one year or more below their chronological age, as compared with 7 out of 25 in the normal group. Based on the evidence provided in this study, there is support for the theses that these two instruments have diagnostic validity when used in the evaluation of children of normal intelligence on whom a diagnosis of



minimal dysfunction has been made on the basis of soft neurological signs only.

A final study related to WISC methodology is that of Pikulski (1972), who correlated Figure Drawing scores and WISC scores in a population of disabled readers. In this study the subjects were 50 boys between the ages of 7-6 and 11-8. All of the subjects were of normal intelligence; WISC Full-Scale IQ's ranged from 80 to 129 with a mean IQ of 104.4. He concluded that scores derived from the Figure Drawings showed significant correlations with scores from the Performance, but not the Verbal, section of the WISC.

#### WISC-R Patterns

Vance (1979) investigated sex differences on the WISC-R profiles for retarded males and females who were matched in terms of Full-Scale IQ's. His sample consisted of 126 children (63 females and 63 males), ranging in age from 7-3 to 8-3. Comparisons of correlations found no significant differences between the sexes for the Verbal, Performance, and Full-Scale IQ's. The sample also found the Verbal Scale more difficult than the Performance Scale.

Zingale and Smith (1978) explored the WISC-R subtest scores for learning disabled children at three different socioeconomic status levels. The subjects were 122 children divided into three groups on the basis of family SES: high, middle, and low. Answers to the following three questions were sought in this study: (a) Does the relationship which

obtains in regular classroom children between SES and IQ test scores also obtain for LD-labeled children? (b) Is the distinct pattern of subtest scores obtained by LD-labeled children the same across SES levels? (c) Is the discrepancy between VIQ and PIQ characteristically found in the WISC-R scores of LD-labeled children? Analysis of the test results found affirmative answers to all three questions. That is, among this sample of LD-labeled children, SES and WISC-R IQ were significantly related, subtests score patterns were independent of SES, and significant VIQ vs PIQ discrepancies existed regardless of SES level (averaging 8.3 points which favored the latter scale). These findings provide evidence that whatever cognitive or psychoeducational deficiencies LD children may have on the Verbal or Performance Scales, they are not qualitatively different across SES levels.

Schwarting (1976) investigated WISC/WISC-R differences for 58 randomly selected school children aged 6 through 15 in a suburban Omaha, Nebraska school, containing grades one through eight. The sample consisted of 25 girls and 33 boys. The order of presentation was counterbalanced to control for practice effects. The test-retest interval between the two tests ranged from 60 to 67 days. Omitted were supplementary tests of Digit Span and Coding. The results included significant WISC/WISC-R differences of 4.86 for the Verbal Scale, 8.74 for the Performance Scale, and 7.49 for the Full-Scale, with the WISC-R scores lower in all

cases with the exception of Comprehension. In addition, all of the WISC/WISC-R mean differences for the 10 subscales were significant except for Vocabulary. The following regression equations were also computed to predict WISC-R scores from WISC results<sup>67</sup>:

$$\text{WISC-R Verbal IQ} = .91 \times (\text{WISC Verbal IQ}) + 5$$

$$\text{WISC-R Performance IQ} = .77 \times (\text{WISC Performance IQ}) + 17.75$$

$$\text{WISC-R Full Scale IQ} = .91 \times (\text{WISC Full Scale IQ}) + 2.72$$

Nevertheless, these results support the conclusions of Hamm, et al., (1976), Weiner and Kaufman (1979), Swerdlik (1977), and Thomas (1980) that children tested with the WISC-R have to be more proficient than they were on the WISC in order to maintain the same relative position. These findings suggest that examiners should expect higher WISC-R IQ scores for any child who, for whatever reason, has been given both tests.

In a related study, Smith (1978) examined the magnitude of differences between scores obtained on the WISC-R for 161 learning disabled children. The intent of this study was to examine the comparability of the WISC-R over time. The mean age of the children was 9-6. The tests were administered on two occasions, with a test-retest interval of 7 months. The findings indicated that both profiles were almost identical

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<sup>67</sup> F. Gene Schwarting, "A Comparison of the WISC and WISC-R," Psychology in the Schools, Vol. 15, No. 9 (April, 1976), p. 141.



( $r=0.94$ ), with the exception of Vocabulary. Further, at both testing occasions, Performance IQ was significantly greater than Verbal IQ. That is, there were greater practice effects on Performance subtests, especially Object Assembly, Picture Completion, and Picture Arrangement, than on Verbal subtests.

In a different kind of study, descriptive and rare in publication, Hirshoren, et al., (1977) reported reliability data of the WISC-R Performance Scale with severely hearing impaired children. The subjects were 59 children between the ages of 8-3 and 13-0; all were prelingually deaf attending a state-supported day school program. Data derived from this study found that the WISC-R Performance Scale possesses adequate reliability for use with a deaf population.

Finally, Gutkin (1979) recategorized the WISC-R subtest scores for a sample of 140 school system verified LD-labeled children and found some support for the pattern predicted by Bannatyne (1974) and confirmed by Smith et al., (1977). The subjects were 53 Caucasian and 87 Mexican-American children, aged 6 to 17 years, from a southwest, urban school district; 74% of the sample were males. In general, findings from this study revealed that the Caucasian children demonstrated the Spatial > Conceptual > Sequential pattern that was predicted by Bannatyne (1974). However, the Mexican-American children did not display this pattern. As a group,

their scores were characterized by a Spatial > Sequential > Conceptual pattern. Interestingly, Gutkin's findings are identical to those of a subsequent study (Zarske and Moore, 1982) revealing that the WISC-R scores accurately identified American Indian Children with the same pattern. These findings, when considered with Gutkin's study, seem to indicate a specific pattern for children of different ethnic groups where Spatial scores are usually higher than Sequencing scores, and where Conceptual scores are usually low. Nevertheless, this study did deal with a population for which this data had not been available.

## CHAPTER III

### RESEARCH DESIGN AND PROCEDURES

#### Subjects

A total sample of 120 Puerto Rican children randomly selected from the bilingual and mainstream programs were involved in this study. Sixty children (twenty from each grade level, three through five) from the bilingual program and sixty children (twenty from each grade level, three through five) from the mainstream program served as subjects. The subjects were matched for grade level, sex, race, socioeconomic status, and school experience. The ages of the male (N=60) and female (N=60) subjects ranged from 8 years 2 months to 13 years 7 months with a mean age of 10 years 1 month. Based on this design, the two subsamples of monolingual and bilingual subjects were classified according to each of the following two language dominance groups:

1. Spanish Dominant: The child can function effectively in the classroom in Spanish, but not in English (Bilingual Program).
2. Balanced Bilingual: The child can function effectively in the classroom in both Spanish and English (Mainstream Program).

Within this framework, then, half of the sample (N=60) were randomly drawn from the bilingual program, whereas the second half (N=60) were randomly drawn from the mainstream program.



## Design

This exploratory study was an ex post facto field study that examined the main and interactive effects as well as relationships among three independent variables and four dependent variables. The three independent variables were grades, sex, and programs. The four dependent variables were the Spanish WISC's Full-Scale, Verbal, and Performance IQ's and the total positive self-concept score of the Piers-Harris Children's Self Concept Scale (P-HCSCS). Since this study had as its specific focus the study of profile patterns, the ten required subtests of the Spanish WISC and the six separate subscales of the P-HCSCS were also computed and tested for statistical significance. Statistical techniques included analysis of variance (ANOVA), two-tailed t-tests, and Pearson product-moment coefficients (r's). The general hypotheses expressed in substantive terms were that the three independent variables would be statistically significant with each of the dependent variables.

This study embodied what Campbell and Stanley (1963) has described as the static-intact group comparison design:

This is a design in which a group which has experienced X is compared with one which has not, for the purpose of establishing the effect of X.<sup>68</sup>

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<sup>68</sup> Donald T. Campbell and Julian C. Stanley, Experimental and Quasi-Experimental Designs for Research (Chicago: Rand McNally and Co., 1963), p. 12.

### Setting

The study was carried out in the Springfield Public Schools, in Springfield, Massachusetts. At the time of the study, the school district (the largest in the city) had an enrollment of approximately 25,000 students enrolled in grades K through 12, of whom 18 percent were classified as Spanish-surnamed (Walsh, 1982). Within the district as a whole, sixteen of the thirty-six elementary schools have bilingual education programs, and within these programs, the vast majority of the students are of Puerto Rican origin. These sixteen schools, identified from available demographic data as having high concentrations of Puerto Rican children, were selected for this study. The final sample of children included an equal number of girls and boys drawn from the bilingual and mainstream settings.

### Selection of Subjects

In this study, a two-stage stratified sampling plan was adopted. In the first stage of sampling, an alphabetized list of the sixteen elementary schools containing bilingual programs was numbered and a primary sample of every third school was randomly selected to serve as a source for the data. After a description of every third school was listed, two matched groups from the third, fourth, and fifth grade populations of these schools were initially stratified by race, sex, and socioeconomic status. In the second stage of sampling (after the strata were established), a table of

random numbers was employed (Kerlinger, 1973) to randomly select an equal number of subjects from each stratum. The selection of schools and the subjects within the schools were considered separately. Among the schools, a school was selected if it met the following criteria:

1. The school contained a fully functioning bilingual program for at least grades K through 5.
2. The school had a large concentration of Hispanic Puerto Rican children involved in mainstreamed programs.
3. The school was judged as "highly effective" both by their principals and by the system's bilingual resource teachers.

Based on the above selection criteria, a total of 120 subjects were randomly selected from 11 different classrooms from 5 schools. In point of fact, an additional 80 subjects were also selected to allow for such factors such as a lack of parental permission, relocation from the area, excessive absenteeism, or failure to meet the required criteria. In addition, a second major purpose of this selection was to have these children (all of whom were selected from outside of the main sample) serve as pilot subjects for the P-HCSCS.

After the schools and children were selected, within each school, the names of all children, their classroom settings (bilingual and mainstream), and the names of all their teachers were recorded. Following this procedure, all of the subjects' medical, psychological, social, and



educational records were made available by each school to the investigator. In each case there was full cooperation.

Data on racial characteristics were established by carefully reviewing each subject's academic cumulative file, which was determined in all cases by inspection. Language proficiency data and birth certificates confirmed that all subjects viewed themselves as members of the race indicated in the school records. All subjects were of a Puerto Rican background, with Spanish as the predominant language spoken at home. All subjects qualified for free or reduced-price meals at their respective schools and were considered to be within the low socioeconomic status. Finally, based on this data, the monolingual subjects were selected if they met the following criteria:

1. All children were in the bilingual program.
2. All children were categorized as monolingual by parental registration questionnaires.
3. All children had a home language other than English.
4. All children were classified as non-English-speaking by language dominance tests such as the Classroom Language Survey (CLS), the Bilingual Syntax Measure (BSM), the Basic Oral Language Test (BOLT), or the Language Assessment Battery (LAB).

Using the above selection criteria, 60 monolingual children met these criteria, and were selected for this study. A descriptive analysis of the sample used in this study is presented in Table 1.

Table 1  
 Characteristics of the Sample  
 (N=120)

Program/Grade Distribution and Total Number of Subjects			
	Bilingual	Mainstream	Total
Grade Three Boys	10	10	20
Grade Three Girls	10	10	20
Grade Four Boys	10	10	20
Grade Four Girls	10	10	20
Grade Five Boys	10	10	20
Grade Five Girls	10	10	20
Total number of boys in bilingual programs			30
Total number of girls in bilingual programs			30
Total number of boys in mainstream programs			30
Total number of girls in mainstream programs			30
Total number of boys			60
Total number of girls			60
Total number of subjects in sample			120

Note:

Native born male population	17
Native born female population	9
Island born male population	53
Island born female population	41
Total	120

Source: Birth certificates and/or cumulative academic information.

### Instruments Used

Two measurement instruments, the Spanish version of the Wechsler Intelligence Scale for Children (Escala de Inteligencia Wechsler para Niños (EIWN) (Roca, 1951) and a Spanish modified version of the Piers-Harris Children's Self Concept Scale (Piers and Harris, 1969) were administered as measures of intelligence and self-concept, respectively, to the 120 children. The following is a brief description of each instrument used in this study:

The Spanish WISC: The cognitive measures used as dependent variables were derived from the Spanish WISC. The Spanish WISC, revised and renormed in 1951 by Roca, is not a simple translation of the English WISC, but is an adapted version designed with the same psychological operations but specifically constructed for use with monolingual Spanish-speaking children. The item analysis and tentative norms were based on samples of children from Puerto Rico. From a psychometric perspective, even though some changes have been made in the test content, there is no real difference in organization between the English WISC and the Spanish WISC. Both have the same type and number of subtests (six on the Verbal scale and six on the Performance scale), and make available three IQ scores: Verbal, Performance, and Full-Scale. Administration time for the complete battery of tests is approximately 50 to 75 minutes. A copy of the front page of the test booklet is shown in Appendix A.



The Piers-Harris Children's Self Concept Scale: The affective measures used as dependent variables came from the Piers-Harris Children's Self Concept Scale (P-HCSCS). This instrument, subtitled The Way I Feel About Myself, developed by Piers and Harris (1969), was translated into the Spanish language and employed to assess self-concept.

The P-HCSCS is a simple 80-item self-descriptive scale designed for children and adolescents, in grades 3-12. The scale is easily individually administered in 20 minutes or group administered in less than an hour. The test measures a broad range of affective dimensions and produces a total score as well as six subscaled scores. Items are scored in a positive self-concept direction, with all items responded to in the keyed direction worth 1 point. Typical examples to which the subjects respond "yes" or "no" follows. These examples are not the actual test items but representations: "I can be trusted to do chores properly," "I often have strange thoughts," "I never volunteer in class," "I am very shy in school." These items are grouped into six self-concept categories that reflect "How I Feel," "What I Am," and "What I Do," with scales such as Behavior, Intellectual and School Status, Anxiety, Popularity, Physical Appearance and Attributes, and Happiness and Satisfaction.

The P-HCSCS is a nonthreatening, deceptively simple, but psychologically sophisticated instrument supported by excellent standardization norms, validity and reliability

data. Unlike the WISC, the P-HCSCS may be administered by teachers, providing the examiner adheres to the stated testing procedures. The test is untimed. A copy of the front page of the test booklet is shown in Appendix B.

### Procedures

As the initial phase in this exploratory study, the following activities were undertaken. First, the investigator scheduled a series of on-site visits and informal meetings in May, of 1980, with administrators, principals, and bilingual teachers of the Springfield Public School System. The major purpose of these meetings were to describe the methodology, instruments, and data collection procedures for the intended study. These activities were submitted in a written proposal to school authorities in which permission was granted to carry out the project. These on-site visits were recognized as an important phase for the successful implementation of the research project which was slated for the opening of the new school year.

Second, during this same period of time (from May to August), the elementary schools with high concentrations of bilingual Spanish-speaking subjects were randomly selected for this study. All 120 subjects identified as Spanish-surnamed (60 monolingual, 60 bilingual) were then randomly selected from eleven classrooms from five different schools.

Third, subsequent to the random selection procedures, all parents were notified (See Appendix C) and informed of

the nature of the research; their cooperation and written consent for their child's voluntary inclusion in the study was requested. Complete details regarding the guarantee of anonymity were provided, along with the assurance that each child's participation was voluntary. Letters were sent in the English and Spanish languages. Self-addressed stamped envelopes were provided to encourage prompt return of the required forms and follow-up letters were employed where necessary. Of 200 parents, 180 responded to these efforts.

Fourth, concurrent with this phase, the investigator requested permission to adapt the Piers-Harris Children's Self Concept Scale into the Spanish language from the test publisher, namely, Counselor Recordings and Tests, and full permission was granted (See Appendix D).

Fifth, the last phase consisted of formulating a voluntary staff of seven Hispanic Puerto Rican elementary teachers to assist in the adaptation of the P-HCSCS into the Spanish language. These teachers were selected in accordance to two major criteria: (1) they were most knowledgeable in the contextual language patterns and/or cognitive learning styles of the intended population, and (2) they were most sympathetic toward the concept of standardized testing to objectify and quantify the children's attitudes, feelings, and self-perceptions.

Sixth, after the above steps were accomplished, and the teachers were selected, follow-up sessions were held



to translate the P-HCSCS into the Spanish language. This team approach was advisedly chosen to achieve the following ends: (a) to revise the P-HCSCS in the Spanish maturity level of elementary Puerto Rican children, (b) to isolate difficult vocabulary terminology and add clarity to the self-report questions, and (c) to develop a linguistically appropriate instrument specifically geared toward Puerto Rican children.

Following this procedure, a cassette tape recording was made of the P-HCSCS in the Spanish language. The recording was made by a bilingual female teacher at the normal speaking rate of 125 words per minute. The instructions and test items were repeated with a five second pause between each of the items. This recording was then critically analyzed and re-recorded until there was complete agreement among all of the teachers that the tape was (1) matched to the literary language and vernacular style of Puerto Rican children, and (2) that the translated version was equivalent to the English version.

Finally, this adapted instrument was further analyzed by an unbiased bilingual Spanish-speaking linguistics professor to insure that the statements were stated in as direct and unambiguous terms as possible. On the whole, this analysis was positive, and thus, no attempt was made to alter any of the items on either the audio tape and/or the test protocol.

### Phase I: The Pilot Study

In order to determine if the Spanish modified version of the P-HCSCS was suitable for the population to be studied, a pilot study was undertaken in early September, at the beginning of the new school year. The purpose of this study was to determine whether the Spanish modified version would be appropriate, both in terms of language used and comprehension level. The students selected for this study were those purposively designated as "extra subjects" during the random selection process. That is, these students were not included in the pool from which the sample was drawn.

The subjects were 60 Puerto Rican children matriculated in both the bilingual (N=30) and mainstream (N=30) education programs in third, fourth, and fifth grades randomly chosen from both programs and each grade level by the investigator. There were 10 subjects from each program in third, fourth, and fifth grade, respectively, with the distribution by sex approximately equal by grade level (32 females, 28 males).

The study was conducted privately during school hours in a distraction free classroom in an area far removed from the mainstream of activity. All subjects were tested with the Spanish modified version of the P-HCSCS, administered under group conditions, in three separate testing sessions. Specifically, the subjects were assigned to smaller groups of 20 subjects each, with a nearly equal number of males and females assigned to each group. All rapport previous

to testing was established in the language corresponding to the test administered. In each session a bilingual Spanish-speaking classroom teacher (acquainted with the children) accompanied the investigator and few minutes prior to each testing session was devoted to conversing with the children. Before final instructions were given, specific dialogue and interactions were intentionally left flexible to address any anxiety the students may have had and to put the students at ease. The students were also informed that their parents and teachers would not see their papers or learn of their scores. The fact that this was not a testing situation was also stressed to the students.

In each session, each child was provided with a copy of the test protocol and a pencil. Each item was then read aloud to achieve uniformity in administration across groups and insure that each child, regardless of his/her reading ability, heard the statements read accurately. That is, the items were presented auditorily by way of a cassette tape recorder (to insure standardization) while the subjects read the items on the scale (to insure comprehension). The same procedure was maintained throughout each group across the study. Each administration was approximately 75 minutes in length.

In accordance with this study's purpose, after each administration, feedback and recommendations concerning the instrument as well as the presentation was requested from



each group. In analyzing the pilot study, primary consideration was given to:

1. Clarifying any language problems on the Spanish version of the P-HCSCS.
2. Choosing descriptive items for the final instrument that were linguistically appropriate for whom the test was designed.
3. Evaluating the mode of presentation with respect to the cassette tape recorder.

In and by itself, the pilot study established several interesting findings. First, it confirmed that the children understood the Spanish version of the P-HCSCS, and that the presentation could be completed in approximately 75 minutes. Second, it highlighted the fact that the use of the cassette tape recorder (or the audio tape in Spanish) had a positive impact on the overall performance of the children. That is, the use of the cassette tape recorder appeared to facilitate the development of attention, comprehension, and feelings of mastery among both groups of subjects. Third, the usefulness of this approach underscored the fact that there would be less chance that a child would be penalized in his/her self-concept because of reading difficulties.

Another major finding from this study was that less than seven percent of the total sample encountered language problems with the vocabulary content of the test protocol. More importantly, however, there were inconsistencies among this same group of subjects as to which vocabulary words

were complex and/or needed to be clarified. Hence, based on these vague findings, the study team (staff teachers who assisted in the adaptation of the P-HCSCS into the Spanish language) felt that these problems were contributed to underdeveloped reading skills rather than vocabulary usage, and thus, no qualitative changes were made on the scale.

Finally, although not part of this study, it is also worthy to note here that deficits in reading skills were found among the monolingual subjects as well as among the bilingual subjects. This analysis receives support from numerous researchers (Borger and Ambron, 1969; Zamm, 1973; Gottesman, Croen, and Rotkin, 1982), who note that a disproportionate number of inner-city children (and children from lower socioeconomic levels) are deficient in reading skills. Nevertheless, while the complexities of reading disorders are now more fully realized (Allington, 1977; Pirozzolo, 1981), findings from the relevant literature seem to suggest that the inferior reading skills of bilingual children are undoubtedly neither well understood nor solidly established by research.

All in all, the cassette tape recorder was considered an important adjunct in insuring optimal performance among those subjects who may have had reading problems. Included in this category were intended subjects from both settings with estimated numbers large enough to warrant this special attention.

## Collection of Data

The testing program was initiated in September of 1980 and terminated in June of 1981. The acquisition of the data was accomplished through the use of two distinct instruments. The first explored the variables of intelligence, and the second explored the variables of self-concept. The instruments were administered by the investigator and where affective measures were evaluated, a bilingual Spanish-speaking teacher was trained by the investigator and remained constant throughout the testing. The instruments were not counterbalanced; in all cases the Spanish WISC was administered prior to the Spanish P-HCSCS. All data were collected anonymously.

### Phase II: The Intelligence Study

The Spanish WISC was individually administered to all 120 pupil-subjects between the months of December and April, 1981. All children were individually tested in their respective schools, either in a private office or in an isolated room free of extraneous noise. All testing was done in one sitting during regular school hours. Five schools were involved in the study.

In each school, each child arrived individually for the testing and was greeted by the investigator, reminded of the consent form sent to his/her parents and briefly informed of the purpose of the study. A brief interview to obtain basic



descriptive data preceded each evaluation. During this time, it was stressed that test scores would remain anonymous and in no way relate to regular schoolwork. In each case, the investigator devoted a full 15 minutes conversing with each child before the test began. This was done in an attempt to create a comfortable atmosphere and to put each child at ease. The children's responses were recorded on regular Spanish WISC protocols. All children were praised between subtests. After each session they were also told they did a very good job.

All tests were administered and scored in accordance with the standardization procedures outlined by Wechsler (1949). All administration and scoring was performed by the investigator, with only the ten subtests recommended for the computation of IQ scores. The subtests Digit Span and Mazes were omitted. Each subject required about one and three quarter hours to complete the test. In addition, scoring and computation techniques, according to procedures in the manual, took approximately 20 minutes per protocol.

### Phase III: The Self-Concept Study

Data for the self-concept study was obtained through group administration of the Spanish modified version of the Piers-Harris Children's Self Concept Scale (P-HCSCS) (Piers-Harris, 1969) to the same 120 children during the month of May. The data was collected in 7 sessions, approximately 75 minutes in length.

The instrument was group administered to 15 to 20 children at a time under the direct supervision of the investigator and a bilingual Spanish-speaking teacher who assisted throughout all of the testing sessions. All of the children were group tested in their respective schools, either in an unused classroom or in an isolated room far removed from the mainstream of activity. A cassette tape of instructions and the test was prepared (in Spanish) in order to standardize the administration of the instrument. The instructions and test questions (repeated twice) were delivered at the same intensity and by the same voice (female) instructing the children to read each question silently and then to circle their answers. In this measure the children were asked to circle "yes" or "no" as their first reaction to questions relating to how they really felt about themselves. Instructions on the tape stressed the importance of answering as they really felt and deciding "yes" or "no" for each question. During each administration the investigator served as test administrator while the bilingual teacher served as test proctor.

Specifically, in each testing session, each child was accompanied to the testing site by the bilingual assistant and was greeted by the investigator who briefly explained the purpose of the study. After a brief introduction to establish rapport, each child was provided with a Spanish modified test booklet, a ruler (to be used as a guide) and

a pencil. Each child was then requested to record his/her name, school, grade, and sex on the test booklet before the testing began. The children were then given unlimited time to ask questions about the test until the investigator felt they were comfortable and thoroughly understood the task. During this phase all children received the same format which included an orientation to the study, the use of the cassette tape recorder, the use of the ruler as a guide, group rules, and the issue of confidentiality. Immediately after this presentation, the following instructions were read aloud (in Spanish) by the bilingual assistant:

The statements in this booklet are concerned with the way you feel about yourself. There are no right or wrong answers because everyone has different opinions and feelings about themselves. For example, If I say "Drawing is more fun than music," I'm sure that everyone in this room would not agree. Some students would agree because they think drawing is more interesting than music but some other students would disagree because they enjoy music more than drawing. Probably some other students would not be sure how to answer because they like both drawing and music. So, you see, there are no right or wrong answers. The most important thing is to mark your answer that shows how you really feel about yourself.

The cassette tape recorder will read each statement aloud while you read it silently from your booklet. After each statement has been read, you are to decide how you feel about it and mark the answer in the test booklet which you have. Circle yes to show that you agree with a statement. Circle no to show that you disagree with a statement. Answer every question, even if some are hard to decide, but do not circle both yes and no.

Please listen carefully to each statement and use your ruler as a guide. Please be sure that you circle the answers that show how you really feel rather than the way you think I would want you to mark them.



In each testing session, the audio-tape of instructions and test was played aloud over the tape recorder situated in the center of the group of children. In the time lapse between questions, the investigator periodically reminded the children to circle yes or no and to place their rulers underneath each statement as a guide. After each playback, the test booklets were individually collected and verified for identification, and the children were thanked.

Immediately following each testing session, the raw data was hand scored by the investigator according to the directions provided by the test manual (Piers-Harris, 1969). Scores used in the analysis of these data included the total score and each of the six separate cluster scores. The total score was obtained by summing the total number of responses scored in the direction of a high (or adequate) self-concept. The six separate cluster scores were obtained by summing the total number of positive responses (items scored in a positive direction) for each of the six separate Factor Scales. Thus, seven separate scores were calculated for each child. Each protocol took approximately 20 minutes to score.

In order to restrict the possible source of error to those involving only item scoring and test administration, a second school psychologist (not involved with the study) also assessed the accuracy of the scored protocols, which yielded 100 percent agreement.

To place in a better perspective the one year study as a whole, the project schedule may be summarized as follows:

- May, 1980: Secure consent of approving schools and propose strategies to bilingual educators of the investigational objectives. Submit proposal of the intended study to school authorities.
- June - August: Randomly select both the schools and the subjects. Examine the cumulative academic files for all participating subjects in each of the target schools. Notify all parents and request written approval of their child's voluntary participation in the study. Examine all participating schools to determine if they meet the required criteria.
- September - November: Secure consent from the test publisher to adapt the P-HCSCS into the Spanish language. Arrange and coordinate a volunteer committee of bilingual practitioners for the successful adaptation of the P-HCSCS into the Spanish language. Select subjects from outside of the universe sample and initiate a pilot study with the P-HCSCS. Make arrangements for testing locations in each of the target schools. Secure parental permission forms from all participating subjects.
- December - May, 1981: Implement testing with the Spanish WISC. Collect and interpret data.
- May - June: Implement group testing with the Spanish modified version of the P-HCSCS. Collect and interpret data.
- July - August: Interpret final results and statistically analyze all data.
- September Evaluate and write the final report.

### Statistical Analysis to be Used

Data derived from this study were subjected to data processing in the Computer Center of the Graduate School at the University of Massachusetts - Amherst Campus. The computer utilized for the statistical procedures was a CDC CYBER 175. Statistical computer designs were selected and based upon the Statistical Package for the Social Sciences (SPSS) (Nie, Hull, Jenkins, Steinbrenner, and Bent, 1975).

Statistical treatment of the data was accomplished by utilizing descriptive and inferential procedures. Hence, descriptive statistics were compiled first. Utilizing both the Spanish WISC and the P-HCSCS for each subject, analyses were made controlling for IQ and self-concept. Means and standard deviations were analyzed by a series of successive comparisons between the two subgroups on each of the scaled scores of the two instruments. Frequency distributions and scattergrams were produced to illustrate basic descriptions and profile patterns of the characteristics of the dependent and independent variables under investigation. Finally, the interrelatedness of the independent measures (grades, sex, and programs) with the dependent measures (Spanish WISC and Spanish P-HCSCS) were determined through the use of Pearson product-moment correlation coefficients. These comparative statistics were undertaken to investigate the degree of relationships between these two data sets.



Inferential statistics were utilized to evaluate the significance of estimates based on the aforementioned data. Three separate statistical procedures were conducted to evaluate statistical significance. These procedures are based upon statistics in common use in evaluation studies; t and F distributions and Pearson product-moment correlation coefficients. In this study, the dependent measures were subjected to a series of two-way analysis of variance (ANOVA) factorial designs involving the independent measures as the design factors. This particular strategy yields an F ratio and was employed to determine the ratio between group variance and within group variance for each dependent variable to measure statistical significance. That is, any F test which exceeded the critical value confirmed a significant difference and in this study, the research hypothesis was accepted. In addition, t-tests were performed to determine the significance of the difference between means for all variables under investigation. Because the t statistic is sensitive (that is, to the number of scores that make up two means) this procedure was used as an extension of the F statistic. Finally, Pearson product-moment correlation coefficients were computed between all dependent and independent variables and examined for statistical significance.

Although the .05 level of confidence was selected as significant for this research, findings at the .01 level

were also reported, since they may suggest fruitful avenues for further study. The references used for statistical procedures were taken from Guilford and Fruchter (1978).

In order to better describe and present data, tables and graphs are employed to facilitate interpretation of results.

## C H A P T E R I V

### ANALYSIS OF DATA

In this chapter the results of the statistical analyses for the two major studies are presented. The topics to be covered are, in sequence: the intelligence study, frequency distributions, and subtest patterns; the self-concept study, frequency distributions, factor scales, and relationships. The characteristics of the self-concept and WISC patterns for each group that participated in the study are detailed, and the findings for each variable are fully summarized.

This exploratory study was designed to study thirty hypotheses measured over four dependent variables. The hypotheses for each dependent variable were evaluated for bilingual and mainstream children for possible differences between programs, sex, and grades, and to determine the extent of interaction among variables. The statistical treatment used a series of two-way analysis of variance (ANOVAS) for measuring the significant differences among the aforementioned groups. This was followed by a series of comparisons of differences between means utilizing t-tests.

Computed t-values for the Spanish WISC subtest scores and for the six separate Factor Scales of the P-HCSCS were obtained and analyzed separately. Frequency distributions for the Spanish WISC Full-Scale IQ scores and for the total



self-concept scores for the P-HCSCS were also computed, and are included. Pearson product-moment correlations of the relationships among the self-concept and intelligence measures as well as among the Factor Scales were also obtained. The .05 level of confidence was selected as significant for this research.

Subgroups analyzed in this research consisted of the two major samples, boys and girls in grade levels three through five from both programs, all boys from each program, and all girls from each program.

Presentation of these results can be found in Tables 2 through 33. Pearson product-moment correlations among the self-concept and intelligence indices can be found in Figure 22 and Tables 34 through 42.

### The Intelligence Study

#### Frequency Distributions

The present study was undertaken as a preliminary effort to ascertain the patterns of Full-Scale IQ measures between monolingual and bilingual subjects according to Wechsler's (1949, 1974) classification system. The instrument used was the Spanish version of the Wechsler Intelligence Scale for Children (Escala de Inteligencia Wechsler para Niños) (Wechsler, 1949). The major purpose of this study was to answer the question: if monolingual and bilingual children are tested with the Spanish WISC,

what would their IQ's be? Another purpose of this study was to present the findings of these comparison studies, many of which are unpublished and/or difficult to obtain, and to discuss the implications of these findings for bilingual school psychologists who make wide use of this instrument.

The results of the frequency distributions for bilingual and mainstream children are presented in Table 2. According to the results of this study, 78.4 percent of the bilingual children and 88.4 percent of the mainstream children fell within the average range of intelligence. Moreover, it should be noted that, of the two groups that fell below the average range of intelligence (70 or less), there was a 15 percent difference that favored the mainstream children. Finally, Full-Scale IQ scores in the range of 130 and above were not observed in either group, and therefore were excluded from Table 2. Further statistical procedures will explore the differences observed.

Table 2

Frequency Distributions of the Spanish WISC Full-Scale IQ Scores between the Bilingual and Mainstream Programs

Program	IQ Range	Frequency	Relative Percentage
Bilingual	120 - 129	(N= 1)	1.7%
	110 - 119	(N= 6)	10.0%
	90 - 109	(N=25)	41.7%
	80 - 89	(N=16)	26.7%
	70 - 79	(N=10)	16.7%
	69 and Below	<u>(N= 2)</u>	<u>3.3%</u>
	Total	60	100.0%
Mainstream	120 - 129	(N= 4)	6.7%
	110 - 119	(N= 9)	15.0%
	90 - 109	(N=37)	61.7%
	80 - 89	(N= 7)	11.7%
	70 - 79	(N= 2)	3.3%
	69 and Below	<u>(N= 1)</u>	<u>1.7%</u>
	Total	60	100.0%

Scheme of Intelligence Classifications:

The WISC (Wechsler, 1949) classification categories are as follows: Very Superior (IQ = 130 and above), Superior (IQ = 120 - 129), High Average (IQ = 110 - 119), Average (IQ = 90 - 109), Low Average (IQ = 80 - 89), Borderline (IQ = 70 - 79), Mental Defective (IQ = 69 and Below)<sup>69</sup>

<sup>69</sup> David Wechsler, The Wechsler Intelligence Scale For Children Test Manual (New York: The Psychological Corporation, 1949), p. 16. (Reproduced with permission).



### Hypothesis I

There is a statistically significant difference in the Full-Scale scores between the two subgroups of Spanish-speaking children among the grades and programs, measured by the Spanish version of the Wechsler Intelligence Scale for Children.

A 2 x 3 analysis of variance was employed to test this hypothesis. The Full-Scale score of the Spanish WISC formed the dependent variable while grades and programs formed the independent variables.

As shown in Table 3, the results of this study revealed significant F ratios for the two independent variables, and the conclusion is, therefore, that there are statistically significant differences between the grades and the programs, and thus, Hypothesis I was supported.

Further analysis was carried out to determine the grades in which the significant differences existed. Please refer to Table 4 for the findings.

Table 3

H<sub>1</sub>: Summary of Two-Way Analysis of Variance for the Full-Scale Scores of the Spanish WISC

Source	df	Sum of Squares	Mean Squares	F
Main Effects (AxB)	3	5,526.117	1,842.039	13.415**
Programs (A)	1	2,270.700	2,270.700	16.537**
Grades (B)	2	3,255.417	1,627.708	11.854**
Interaction (AxB)	2	623.150	311.575	2.267
Error	114	15,653.400	137.311	
Total	119	21,802.667		

\*Significant at  $p < .05$ , exceeds critical of  $p < .05 = 2.69$   
 \*\* $p < .01$

#### Full-Scale IQ: Comparisons between Grades

As presented in Table 4, results from t-tests revealed mean Full-Scale scores that ranged from a low of 86.35 for bilingual fifth graders to a high of 104.70 for mainstream third graders. As can be seen, the mean score differences were not significant for grade three, but were significant for grade five ( $p < .05$ ), and to an even greater degree for grade four ( $p < .01$ ). Of particular interest is the finding that the mean performance of the mainstream group was higher than the bilingual group among all three grades. Moreover, the mean Full-Scale scores found between the bilingual and mainstream programs were 91.82 and 100.52, respectively.

Table 4  
Means, Standard Deviations, and t-Values  
for Programs by Grades

Subgroups	Program	Mean	SD	t
Grade Three:	Bilingual (N=20)	102.05	11.33	.72
	Mainstream (N=20)	104.70	12.05	
Grade Four:	Bilingual (N=20)	87.05	9.75	4.40**
	Mainstream (N=20)	100.70	9.89	
Grade Five:	Bilingual (N=20)	86.35	13.51	2.32*
	Mainstream (N=20)	96.15	13.23	
Programs:	Bilingual (N=60)	91.82	13.57	
	Mainstream (N=60)	100.52	12.12	

\*Significant at  $p < .05$ , exceeds critical of  $p < .05 = 2.021$

\*\* $p < .01$



### Hypothesis II

There is a statistically significant difference in the Full-Scale scores between sex of participants and the two educational programs, measured by the Spanish version of the Wechsler Intelligence Scale for Children.

Inspection of the analysis of variance (shown below in Table 5) suggests that a significant F ratio was obtained for programs, but not for sex of participants. Therefore, Hypothesis II was not supported.

Further analysis was carried out to investigate the mean score differences between the programs and between the sexes. Means, standard deviations, and t-values for these variables are summarized in Table 6.

Table 5

H<sub>2</sub>: Summary of Two-Way Analysis of Variance for the Full-Scale Scores of the Spanish WISC

Source	df	Sum of Squares	Mean Squares	F
Main effects (AxB)	2	2,280.333	1,140.167	6.835**
Programs (A)	1	2,270.700	2,270.700	13.613**
Sex of Participants (B)	1	9.633	9.633	.058
Interaction (AxB)	1	172.800	172.800	1.036
Error	116	19,349.533	166.806	
Total	119	21,802.667		

\*Significant at  $p < .05$ , exceeds critical of  $p < .05 = 3.08$

\*\* $p < .01$

### Comparisons Among Participants of the Same Sex

As revealed in Table 6, separate analyses were performed between and within the sexes. Using t-tests, a statistical significant difference was found between the girls, but not between the boys. As can be seen, the bilingual boys achieved a higher mean score than the bilingual girls. However, the mainstream differences were in the opposite direction; girls showed the higher mean score, though these differences were not significant.

Table 6

Means, Standard Deviations, and t-Values for  
Programs by Participants of the Same Sex

Subgroups	Program	Mean	SD	t
Boys:	Bilingual (N=30)	93.30	13.46	1.89
	Mainstream (N=30)	99.60	12.29	
Girls:	Bilingual (N=30)	90.33	13.73	3.32**
	Mainstream (N=30)	101.43	12.09	

\*Significant at  $p < .05$ , exceed critical of  $p < .05 = 2.000$

\*\* $p < .01$

### Hypothesis III

There is a statistically significant difference in the Verbal Scaled scores between the two subgroups of Spanish-speaking children among the grades and programs, measured by the Spanish version of the Wechsler Intelligence Scale for Children.

A 2 x 3 analysis of variance was employed to test this hypothesis. The Verbal Scaled score formed the dependent variable while grades and programs formed the independent variables.

As shown in Table 7, the results of this study revealed significant F ratios for the two independent variables, and the conclusion is, therefore, that there are statistically significant differences between the grades and between the programs, and thus, Hypothesis III was supported.

Further analysis was carried to investigate the grades in which significant differences existed. Please refer to Table 8 for the findings.



Table 7

H<sub>3</sub>: Summary of Two-Way Analysis of Variance for the Verbal Scaled Scores of the Spanish WISC

Source	df	Sum of Squares	Mean Squares	F
Main Effects (A&B)	3	4,801.925	1,600.642	11.678**
Programs (A)	1	2,193.075	2,193.075	16.001**
Grades (B)	2	2,608.850	1,340.425	9.517**
Interaction (AxB)	2	644.150	322.075	2.350
Error	114	15,624.850	137.060	
Total	119	21,070.925		

\*Significant at  $p < .05$ , exceeds critical of  $p < .05 = 2.69$   
 \*\* $p < .01$

#### Verbal IQ: Comparisons between Grades

The findings of the present study (Table 8) revealed mean Verbal Scaled scores that ranged from a low of 86.10 (bilingual fourth graders) to a high of 102.85 (mainstream third graders). As seen in Table 8, results from t-tests yielded significant differences for grades four and five, but not for grade three. Inspection of these data showed that the mean score differences were lowest between third grade groups, somewhat higher between fifth grade groups, and greatest between fourth grade groups. Interestingly, the results of this study seem to parallel that of the Full-Scale study previously cited.

Table 8  
Means, Standard Deviations, and t-Values for  
Programs by Grades

Subgroups	Program	Mean	SD	t
Grade Three:	Bilingual (N=20)	100.00	12.07	.72
	Mainstream (N=20)	102.85	12.79	
Grade Four:	Bilingual (N=20)	86.10	10.58	4.62**
	Mainstream (N=20)	100.30	8.77	
Grade Five:	Bilingual (N=20)	86.15	12.88	2.14*
	Mainstream (N=20)	94.75	12.58	
Programs:	Bilingual (N=60)	90.75	13.41	
	Mainstream (N=60)	99.30	11.83	

\*Significant at  $p < .05$ , exceeds critical of  $p < .05 = 2.021$

\*\* $p < .01$

### Hypothesis IV

There is a statistically significant difference in the Verbal Scaled scores between sex of participants and the two educational programs, measured by the Spanish version of the Wechsler Intelligence Scale for Children.

As presented in Table 9 (shown below) a significant F ratio was obtained between the programs, but not between the sexes. Hypothesis IV, therefore, was not supported.

Further analysis was carried out to investigate the mean score differences between the programs and between the sexes. Means, standard deviations, and t-values for these variables are summarized in Table 10.

Table 9

H<sub>4</sub>: Summary of Two-Way Analysis of Variance for the Verbal Scaled Scores of the Spanish WISC

Source	df	Sum of Squares	Mean Squares	F
Main Effects (A&B)	2	2,199.150	1,099.575	6.820**
Programs (A)	1	2,193.075	2,193.075	13.603**
Sex of Participants (B)	1	6.075	6.075	.038
Interaction (AxB)	1	170.408	170.408	1.057
Error	116	18,701.367	161.219	
Total	119	21,070.925		

\*Significant at  $p < .05$ , exceeds critical of  $p < .05 = 3.08$

\*\* $p < .01$



### Comparisons Among Participants of the Same Sex

Inspection of Table 10 reveals that the present Verbal Scale study is consistent with that of the previous Full-Scale study. That is, these results suggest two notable similarities: first, a statistical significant difference was found between the girls, but not between the boys, and second, the mainstream groups achieved higher Verbal Scaled scores than the bilingual groups. These findings are consistent with Hypothesis II.

Table 10

Means, Standard Deviations, and t-Values for  
Programs by Participants of the Same Sex

Subgroups	Program	Mean	SD	t
Boys:	Bilingual (N=30)	92.17	12.13	1.95
	Mainstream (N=30)	98.33	12.33	
Girls:	Bilingual (N=30)	89.33	14.66	3.22**
	Mainstream (N=30)	100.27	11.45	

\*Significant at  $p < .05$ , exceeds critical of  $p < .05 = 2.000$

\*\* $p < .01$

### Hypothesis V

There is a statistically significant difference in the Performance Scaled scores between the two subgroups of Spanish-speaking children among the grades and programs, measured by the Spanish version of the Wechsler Intelligence Scale for Children.

The results of the analysis of variance is presented in Table 11. Inspection of these data revealed statistically significant differences between the grades and between the programs, and thus, Hypothesis V was supported.

Further analysis was carried out to determine the grades in which significant differences existed. Means, standard deviations, and t-values for these variables are summarized in Table 12.

Table 11

H<sub>5</sub>: Summary of Two-Way Analysis of Variance for the Performance Scaled Scores of the Spanish WISC

Source	df	Sum of Squares	Mean Squares	F
Main Effects (A&B)	3	4,256.625	1,418.875	8.127**
Programs (A)	1	1,463.008	1,463.008	8.380**
Grades (B)	2	2,793.617	1,396.808	8.001**
Interaction (AxB)	2	475.417	237.708	1.362
Error	114	19,901.950	174.579	
Total	119	24,633.992		

\*Significant at  $p < .05$ , exceeds critical of  $p < .05 = 2.69$

\*\* $p < .01$

### Performance IQ: Comparisons between Grades

The present study revealed mean Performance Scaled scores that ranged from a low of 89.30 (bilingual fifth graders) to a high of 105.60 (mainstream third graders). As can be seen in Table 12, results from t-tests are statistically significant for fourth grade groups, but not for third or fifth grade groups. The latter group approached, but did not achieve statistical significance.

Table 12

Means, Standard Deviations, and t-Values for  
Programs by Grades

Subgroups	Program	Mean	SD	t
Grade Three:	Bilingual (N=20)	104.20	11.69	.35
	Mainstream (N=20)	105.60	13.45	
Grade Four:	Bilingual (N=20)	90.50	11.68	2.80**
	Mainstream (N=20)	100.90	11.82	
Grade Five:	Bilingual (N=20)	89.30	15.67	1.92
	Mainstream (N=20)	98.45	14.43	
Programs:	Bilingual (N=60)	94.67	14.61	
	Mainstream (N=60)	101.65	13.39	

\*Significant at  $p < .05$ , exceeds critical of  $p < .05 = 2.021$

\*\* $p < .01$



### Hypothesis VI

There is a statistically significant difference in the Performance Scaled scores between sex of participants and the two educational programs, measured by the Spanish version of the Wechsler Intelligence Scale for Children.

As presented in Table 13 (shown below), a significant F ratio was obtained between the programs, but not between the sexes. Hypothesis VI, therefore, was not supported.

Further analysis was carried out to investigate the mean score differences between the programs and between the sexes. Means, standard deviations, and t-values for these variables are summarized in Table 14.

Table 13

H<sub>6</sub>: Summary of Two-Way Analysis of Variance for the Performance Scaled Scores of the Spanish WISC

Source	df	Sum of Squares	Mean Squares	F
Main Effects (A&B)	2	1,472.083	736.042	3.708*
Programs (A)	1	1,463.008	1,463.008	7.370*
Sex of Participants (B)	1	9.075	9.075	.046
Interaction (AxB)	1	134.408	134.408	.677
Error	116	23,027.500	198.513	
Total	119	24,633.992		

\*Significant at  $p < .05$ , exceeds critical of  $p < .05 = 3.08$

\*\* $p < .01$

### Comparisons Among Participants of the Same Sex

As revealed in Table 14, separate analyses were performed between and within the sexes. Using  $t$ -tests, a statistical significant difference was found between the girls, but not between the boys. As can be seen, the mainstream girls performed significantly better than the bilingual girls. Mainstream girls appeared to outscore mainstream boys, while bilingual boys appeared to outscore bilingual girls. Thus, it may be concluded from this study that the overall performance of the mainstream groups were superior to that of the bilingual groups in both comparisons.

Table 14

Means, Standard Deviations, and  $t$ -Values for  
Programs by Participants of the Same Sex

Subgroups	Program	Mean	SD	$t$
Boys:	Bilingual (N=30)	96.00	16.18	1.26
	Mainstream (N=30)	100.87	13.55	
Girls:	Bilingual (N=30)	93.33	13.00	2.67**
	Mainstream (N=30)	102.43	13.41	

\*Significant at  $p < .05$ , exceeds critical of  $p < .05 = 2.000$

\*\* $p < .01$

### Summary of Findings

Three separate  $2 \times 3$  and three  $2 \times 2$  analysis of variance factorial designs were performed to test the significance of the differences among the three independent variables. There were consistently significant differences between the two educational programs and among the three grades. Interestingly, no significant differences were found for the value of  $F$ 's in opposite sex comparisons.

Further testing through the use of  $t$ -tests indicated statistically significant differences in eight of the comparisons. Inspection of these data revealed statistically significant differences for grade four on the Full-Scale, Verbal, and Performance measures, and between programs in grade five for the Full-Scale and Verbal measures. Of particular interest is the statistical significance found among all three IQ measures for the total sample of only girls. The difference consistently favored the mainstream girls. This unexpected finding is remarkable because the initial analyses failed to find significant differences between the sexes. Overall, the mean scores for bilingual grades and programs were lower in all cases, though not always significantly so.



## Subtest Patterns

### Hypothesis VII

There is a statistically significant difference in performance between both groups of pupils in the two educational programs among the ten required subtests, measured by the Spanish version of the Wechsler Intelligence Scale for Children.

#### Between Programs

The results of the analysis of t-tests for this study are presented in Table 15. The data gathered in this study showed significant t-ratios on seven of the ten subtests of the Spanish WISC, and thus, Hypothesis VII was supported.

As can be seen in Table 15, statistically significant differences were found between the two groups of pupils on the Spanish WISC's Information, Comprehension, Arithmetic, Similarities, Picture Arrangement, Block Design, and Object Assembly subtests when subjected to t-test analysis. No significant differences were found among the subtests of Vocabulary, Picture Completion, and Coding. In the seven instances where significant differences were found, the direction of the differences favored the mainstream group. In addition, significant differences were found among four of the five subtests of the Verbal Scale. These data may suggest that monolingual and bilingual children differ in their performance on verbal measures. In point of fact, six of the seven subtests were significant at the .01 level.

Profile data, as depicted in Figure 8, shows a graphic illustration of the mean scaled score scatter across the ten subtests. Viewed from the perspective of scatter analysis, the subtests Coding and Picture Completion yielded the least amount of disparity (.85 and .07), whereas the subtests of Comprehension, Block Design, Similarities, and Information deviated most significantly. Nonetheless, upon observation, one can readily see that the mainstream group performed significantly higher than their bilingual counterparts on seven of the ten subtests.

Table 15

Means, Standard Deviations, and t-Values of Subtest Scaled Scores between the Bilingual and Mainstream Programs

Subtests	Program	Mean	SD	t
Information	Bilingual (N=60)	6.50	.260	3.48**
	Mainstream (N=60)	7.83	.281	
Comprehension	Bilingual (N=60)	8.17	.295	4.12**
	Mainstream (N=60)	9.87	.288	
Arithmetic	Bilingual (N=60)	7.82	.351	2.99**
	Mainstream (N=60)	9.17	.283	
Similarities	Bilingual (N=60)	9.40	.359	3.66**
	Mainstream (N=60)	11.13	.309	
Vocabulary	Bilingual (N=60)	10.80	.434	1.13
	Mainstream (N=60)	11.45	.381	
Picture Completion	Bilingual (N=60)	10.10	.352	.07
	Mainstream (N=60)	10.07	.333	
Picture Arrangement	Bilingual (N=60)	8.53	.424	2.63**
	Mainstream (N=60)	9.97	.343	
Block Design	Bilingual (N=60)	8.07	.373	3.72**
	Mainstream (N=60)	9.98	.355	
Object Assembly	Bilingual (N=60)	8.95	.391	2.35*
	Mainstream (N=60)	10.27	.403	
Coding	Bilingual (N=60)	10.50	.376	.85
	Mainstream (N=60)	10.97	.397	

\*Significant at  $p < .05$ , exceeds critical of  $p < .05 = 1.980$

\*\* $p < .01$



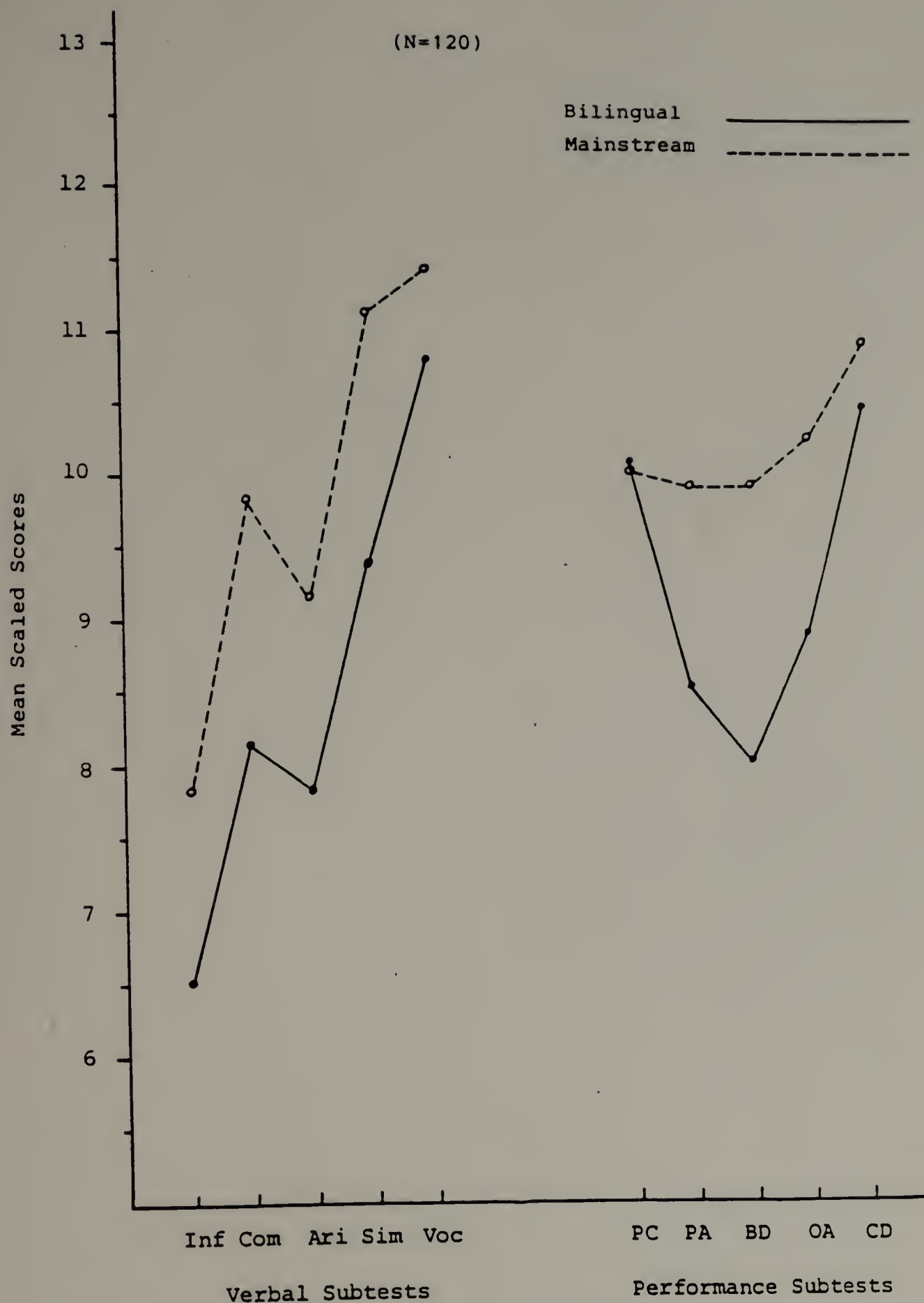


Figure 8. A Comparison of the Spanish WISC Subtest Patterns between the Bilingual and Mainstream Programs.

### Hypothesis VIII

There is a statistically significant difference in performance between both groups of boys in the two educational programs among the ten required subtests, measured by the Spanish version of the Wechsler Intelligence Scale for Children.

#### Between Boys

As indicated in Table 16, statistically significant differences were found on two of the ten subtests, and thus, Hypothesis VIII was only weakly supported.

Results of  $t$ -tests yielded statistically significant differences on the Comprehension and Similarities subtests, but no significant differences were found on the remaining eight subtests. The subtest Information approached, but did not exceed the significant level. As shown in Table 16, nine of the ten mean score differences favored the mainstream group, though only two of the differences were statistically significant. Specifically, these differences were found only on the Verbal Scale; the differences were in favor of the mainstream group.

Means, standard deviations, and  $t$ -ratios for these two subsamples are summarized in Table 16.

A comparison of the subtest patterns between these two subsamples is graphically displayed in Figure 9.

Table 16

Means, Standard Deviations and t-Values of Subtest Scaled Scores between All Boys of Both Programs

Subtests	Program		Mean	SD	t
Information	Bilingual (N=30)		6.53	1.57	1.84
	Mainstream (N=30)		7.50	2.42	
Comprehension	Bilingual (N=30)		8.33	2.07	2.94**
	Mainstream (N=30)		9.97	2.22	
Arithmetic	Bilingual (N=30)		8.17	3.05	.67
	Mainstream (N=30)		8.63	2.31	
Similarities	Bilingual (N=30)		9.77	2.58	2.17*
	Mainstream (N=30)		11.17	2.41	
Vocabulary	Bilingual (N=30)		11.00	3.04	.58
	Mainstream (N=30)		11.43	2.73	
Picture Completion	Bilingual (N=30)		10.43	2.75	.37
	Mainstream (N=30)		10.17	2.88	
Picture Arrangement	Bilingual (N=30)		8.77	3.43	1.55
	Mainstream (N=30)		9.93	2.30	
Block Design	Bilingual (N=30)		8.73	3.07	1.70
	Mainstream (N=30)		10.07	2.99	
Object Assembly	Bilingual (N=30)		9.57	3.31	1.23
	Mainstream (N=30)		10.60	3.21	
Coding	Bilingual (N=30)		9.60	3.09	.39
	Mainstream (N=30)		9.90	2.94	

\*Significant at  $p < .05$ , exceeds critical of  $p < .05 = 2.000$

\*\* $p < .01$



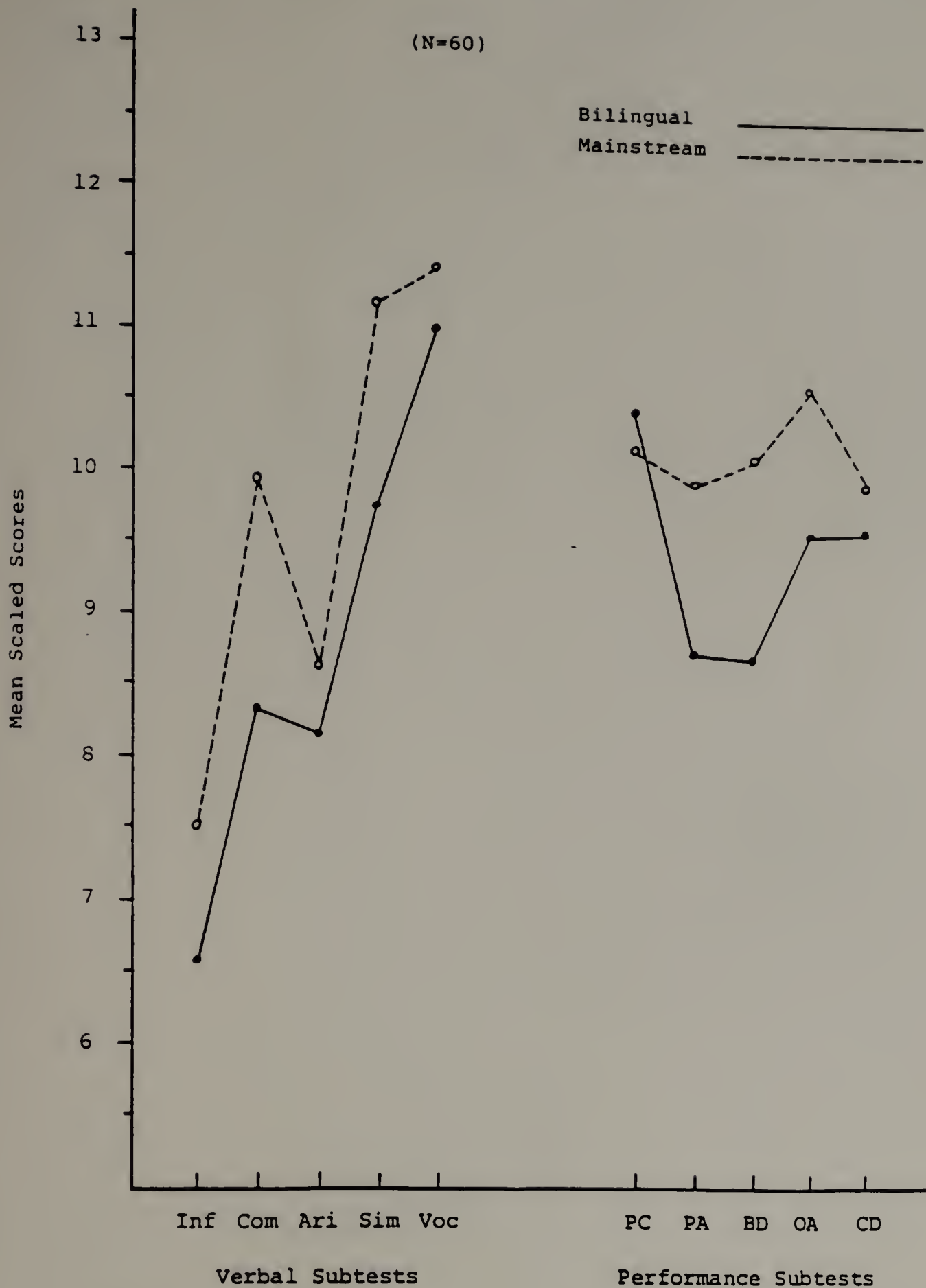


Figure 9. A Comparison of the Spanish WISC Subtest Patterns between All Boys of Both Programs.

### Hypothesis IX

There is a statistically significant difference in performance between both groups of girls in the two educational programs among the ten required subtests, measured by the Spanish version of the Wechsler Intelligence Scale for Children.

#### Between Girls

The results of the analysis of t-tests for this study are presented in Table 17. The data gathered in this study showed significant t-ratios on seven of the ten subtests of the Spanish WISC, and thus, Hypothesis IX was supported.

As can be seen in Table 17, significant differences were found on the subtests Information, Comprehension, Arithmetic, Similarities, Picture Arrangement, Block Design, and Object Assembly. No significant differences were found on Picture Completion, Vocabulary, or Coding. In general, relative to their bilingual peers, the mainstream girls achieved higher scores on all seven statistically significant subtests, and in the same direction on all three nonsignificant subtests.

Profile data, as depicted in Figure 10, shows a graphic illustration of the scatter patterns between both groups of girls across the ten subtests. As presented, the greatest disparities are evident on the subtests of Arithmetic and Block Design.

Table 17

Means, Standard Deviations, and t-Values of Subtest Scaled Scores between All Girls of Both Programs

Subtests	Program		Mean	SD	t
Information	Bilingual (N=30)		6.47	2.40	3.04**
	Mainstream (N=30)		8.17	1.89	
Comprehension	Bilingual (N=30)		8.00	2.50	2.86**
	Mainstream (N=30)		9.77	2.27	
Arithmetic	Bilingual (N=30)		7.47	2.33	4.01**
	Mainstream (N=30)		9.70	1.97	
Similarities	Bilingual (N=30)		9.03	2.96	2.95**
	Mainstream (N=30)		11.10	2.42	
Vocabulary	Bilingual (N=30)		10.60	3.69	.97
	Mainstream (N=30)		11.47	3.20	
Picture Completion	Bilingual (N=30)		9.77	2.70	.31
	Mainstream (N=30)		9.97	2.28	
Picture Arrangement	Bilingual (N=30)		8.30	3.16	2.13*
	Mainstream (N=30)		10.00	3.01	
Block Design	Bilingual (N=30)		7.40	2.58	3.79**
	Mainstream (N=30)		9.90	2.52	
Object Assembly	Bilingual (N=30)		8.33	2.62	2.18*
	Mainstream (N=30)		9.93	3.04	
Coding	Bilingual (N=30)		11.40	2.46	.92
	Mainstream (N=30)		12.03	2.87	

\*Significant at  $p < .05$ , exceeds critical of  $p < .05 = 2.000$

\*\* $p < .01$



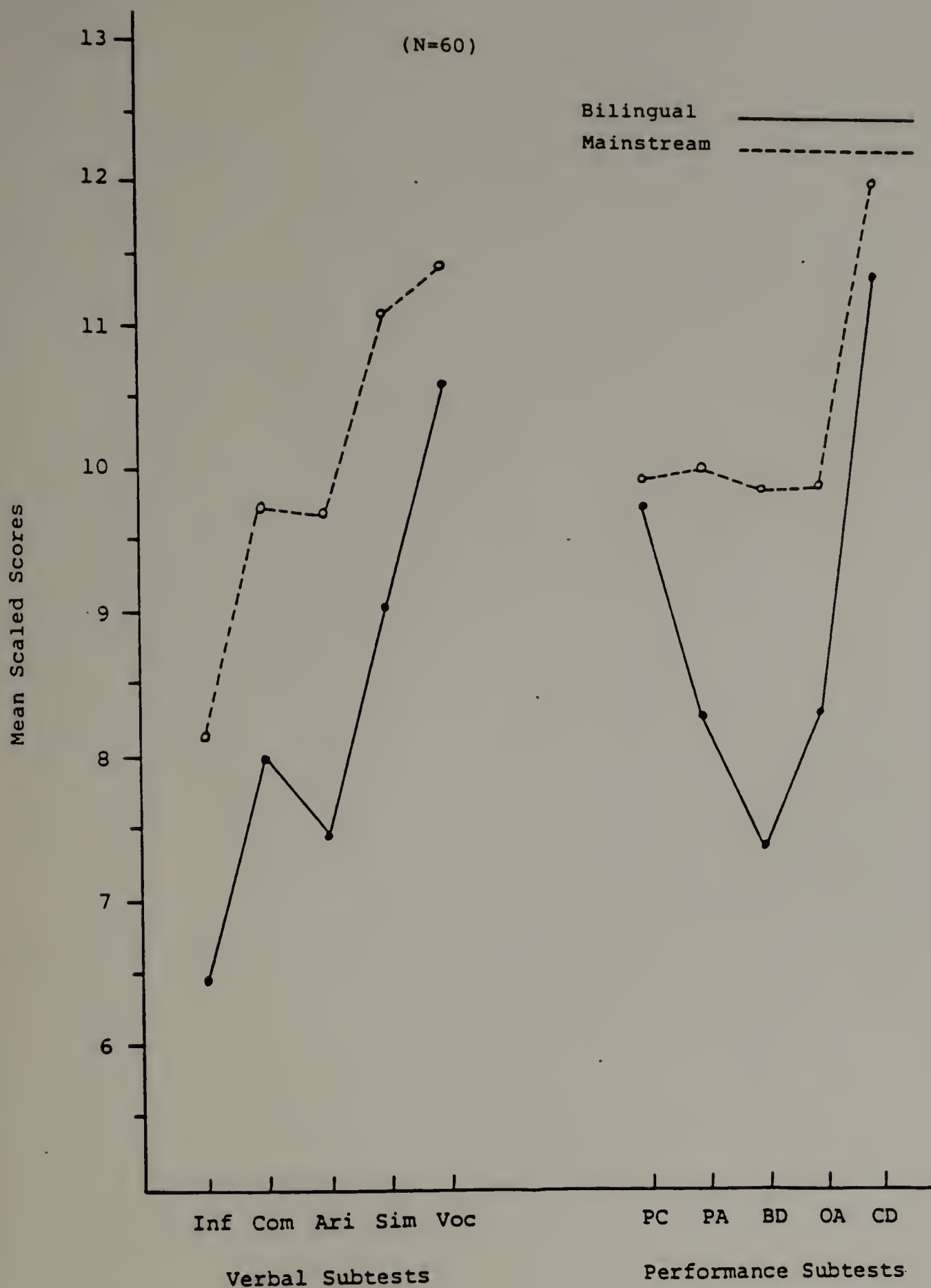


Figure 10. A Comparison of the Spanish WISC Subtest Patterns between All Girls of Both Programs.

### Hypothesis X

There is a statistically significant difference in performance between third grade pupils in the two educational programs among the ten required subtests, measured by the Spanish version of the Wechsler Intelligence Scale for Children.

#### Between Third Grade Pupils

Table 18 presents means, standard deviations, and t-values for bilingual and mainstream third grade pupils, as measured by the Spanish WISC. As reported in Table 18, the analysis from t-tests revealed no significant interactions among the ten subtests, which necessitates the rejection of Hypothesis X as stated.

As can be seen in Table 18, the comparisons suggest that with only a few exceptions, mean score differences between third grade pupils of each program were remarkably similar with respect to subtest performance on the Spanish WISC. Since all t-tests failed to approach an acceptable level of significance, it can be concluded that the overall performance of the bilingual pupils was comparable to that of the mainstream pupils.

Scatter patterns for these two samples are graphically presented in Figure 11. Upon observation, one can readily see that the mean scores are comparable in magnitude across most of the ten subtests.

Table 18

Means, Standard Deviations, and t-Values of Subtest Scaled Scores between Third Grade Pupils of Both Programs

Subtests	Program	Mean	SD	t
Information	Bilingual (N=20)	7.15	2.28	1.77
	Mainstream (N=20)	8.50	2.54	
Comprehension	Bilingual (N=20)	9.65	1.95	.83
	Mainstream (N=20)	10.20	2.24	
Arithmetic	Bilingual (N=20)	9.65	2.60	.30
	Mainstream (N=20)	9.90	2.59	
Similarities	Bilingual (N=20)	10.75	2.27	1.21
	Mainstream (N=20)	11.60	2.19	
Vocabulary	Bilingual (N=20)	12.85	3.30	.71
	Mainstream (N=20)	12.10	3.39	
Picture Completion	Bilingual (N=20)	11.20	2.89	.83
	Mainstream (N=20)	10.50	2.41	
Picture Arrangement	Bilingual (N=20)	10.05	2.70	.43
	Mainstream (N=20)	10.40	2.39	
Block Design	Bilingual (N=20)	9.25	2.42	1.88
	Mainstream (N=20)	10.70	2.45	
Object Assembly	Bilingual (N=20)	10.05	2.89	.84
	Mainstream (N=20)	10.90	3.51	
Coding	Bilingual (N=20)	12.40	2.33	.87
	Mainstream (N=20)	11.55	3.72	

\*Significant at  $p < .05$ , exceeds critical of  $p < .05 = 2.021$   
 \*\* $p < .01$



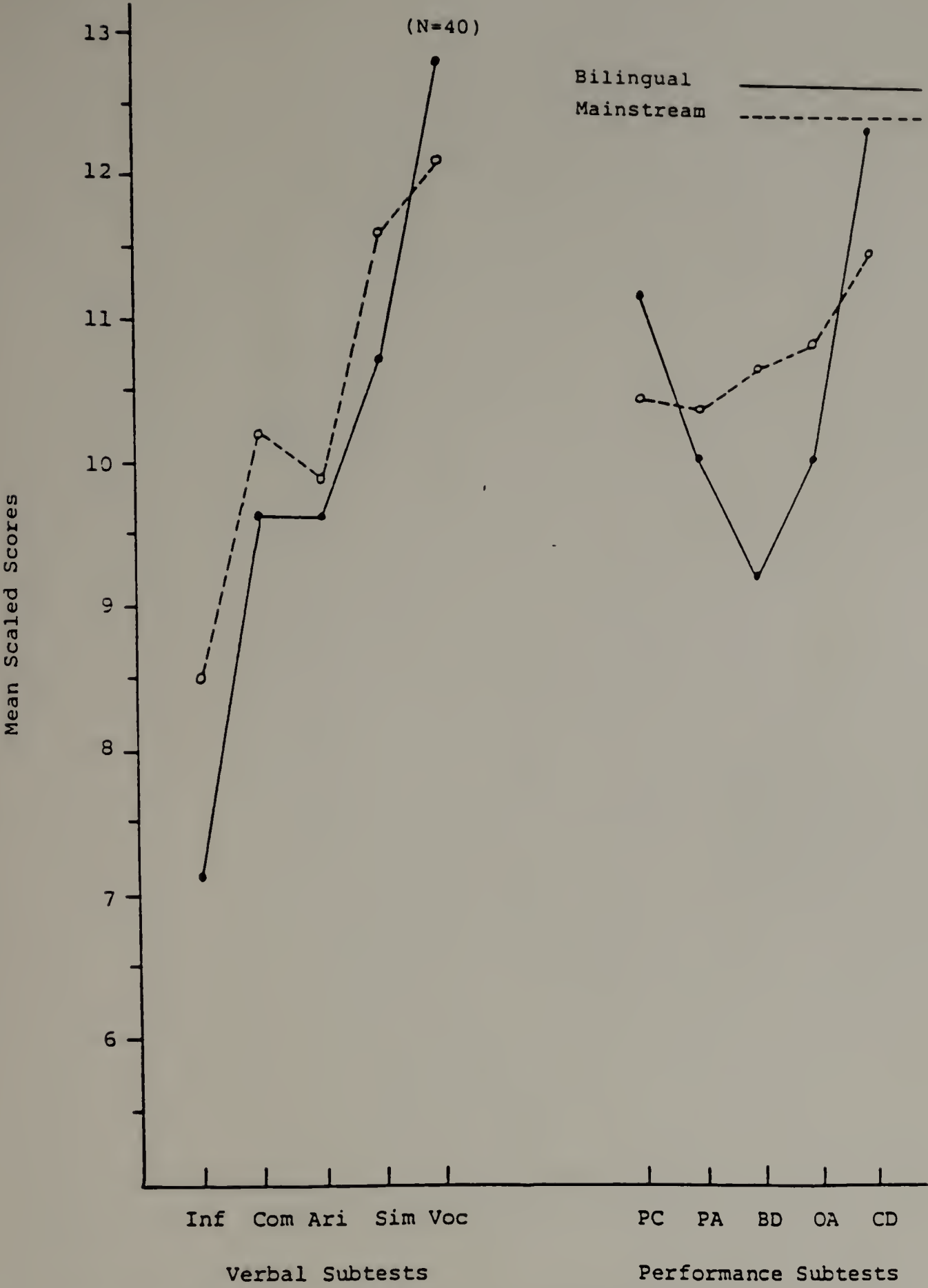


Figure 11. A Comparison of the Spanish WISC Subtest Patterns between the Third Grade Pupils of Both Programs.

### Hypothesis XI

There is a statistically significant difference in performance between fourth grade pupils in the two educational programs among the ten required subtests, measured by the Spanish version of the Wechsler Intelligence Scale for Children.

#### Between Fourth Grade Pupils

Table 19 presents means, standard deviations, and t-values for bilingual and mainstream fourth grade pupils, as measured by the Spanish WISC. As reported in Table 19, analysis from t-tests revealed statistically significant differences on five of the ten subtests, and therefore, Hypothesis XI was only partially supported.

In this study, statistically significant differences were found on the subtests of Information, Comprehension, Arithmetic, Similarities, and Block Design. In contrast, no significant differences were found on the subtests of Vocabulary, Picture Completion, Picture Arrangement, Object Assembly, or Coding. Interestingly, four of the five significant subtests were found on the Verbal Scale. On the Performance Scale, however, subtest scores tended to be similar and nonsignificant, with the exception of Block Design. Though only five differences were significant, all ten differences favored the mainstream group.

A comparison of the subtest patterns between these two subsamples is graphically displayed in Figure 12.

Table 19

Means, Standard Deviations, and t-Values of Subtest Scaled Scores between Fourth Grade Pupils of Both Programs

Subtests	Program		Mean	SD	t
Information	Bilingual (N=20)		6.05	1.64	2.68*
	Mainstream (N=20)		7.45	1.67	
Comprehension	Bilingual (N=20)		7.70	2.00	4.17**
	Mainstream (N=20)		10.40	2.09	
Arithmetic	Bilingual (N=20)		6.55	2.01	4.87**
	Mainstream (N=20)		9.30	1.52	
Similarities	Bilingual (N=20)		8.45	2.33	4.20**
	Mainstream (N=20)		11.50	2.26	
Vocabulary	Bilingual (N=20)		10.25	3.13	1.54
	Mainstream (N=20)		11.60	2.37	
Picture Completion	Bilingual (N=20)		9.40	1.90	.67
	Mainstream (N=20)		9.90	2.71	
Picture Arrangement	Bilingual (N=20)		8.15	3.31	1.90
	Mainstream (N=20)		9.85	2.25	
Block Design	Bilingual (N=20)		7.15	2.41	3.72**
	Mainstream (N=20)		10.15	2.68	
Object Assembly	Bilingual (N=20)		8.70	2.74	1.28
	Mainstream (N=20)		9.85	2.94	
Coding	Bilingual (N=20)		9.80	2.76	1.28
	Mainstream (N=20)		10.95	2.91	

\*Significant at  $p < .05$ , exceeds critical of  $p < .05 = 2.021$   
 \*\* $p < .01$



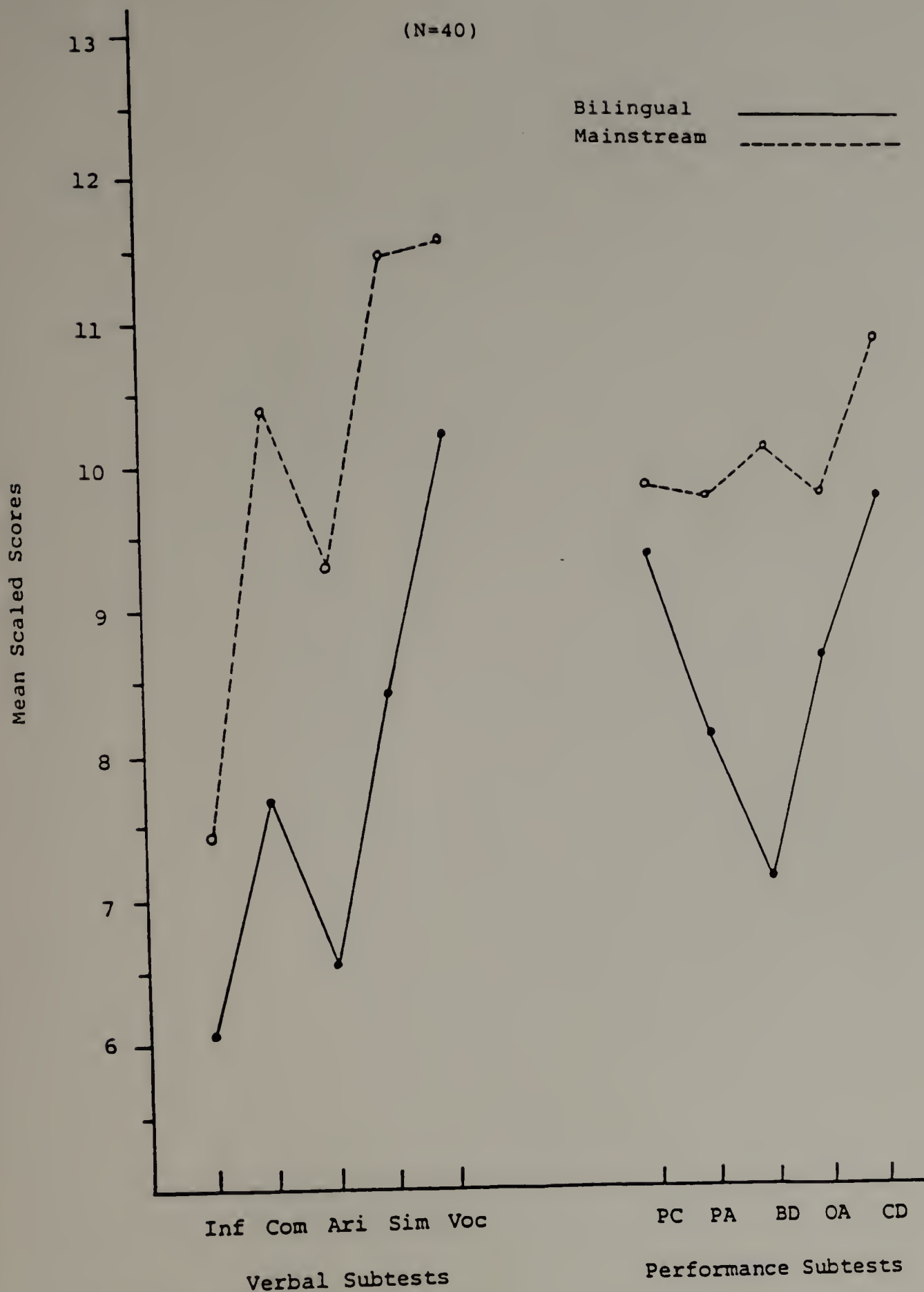


Figure 12. A Comparison of the Spanish WISC Subtest Patterns between the Fourth Grade Pupils of Both Programs.

### Hypothesis XII

There is a statistically significant difference in performance between fifth grade pupils in the two educational programs among the ten required subtests, measured by the Spanish version of the Wechsler Intelligence Scale for Children.

#### Between Fifth Grade Pupils

Table 20 presents means, standard deviations, and t-values for bilingual and mainstream fifth grade pupils, as measured by the Spanish WISC. As shown in Table 20, analysis from t-tests revealed statistically significant differences on only two of the ten subtests. Therefore, Hypothesis XII was only weakly supported.

In this study, statistically significant differences were found on the Comprehension (2.67,  $p < .05$ ) and Picture Arrangement (2.15,  $p < .05$ ) subtests. Further inspection of these data revealed that the bilingual and mainstream groups differed on each of the ten subtests, with the latter group being superior to the former group in all comparisons. This finding is further demonstrated in Figure 13, which shows the profile patterns for each group across the ten subtests. As can be seen, the scatter patterns of the two groups show some evident irregularity among most of the mean subtest scores. However, despite the large amount of scatter in the profiles, only two of the ten subtests reached significance at the .05 level.

Table 20

Means, Standard Deviations, and t-Values of Subtest Scaled Scores between Fifth Grade Pupils of Both Programs

Subtests	Program	Mean	SD	t
Information	Bilingual (N=20)	6.30	2.00	1.88
	Mainstream (N=20)	7.55	2.19	
Comprehension	Bilingual (N=20)	7.15	2.18	2.67*
	Mainstream (N=20)	9.00	2.20	
Arithmetic	Bilingual (N=20)	7.25	2.13	1.41
	Mainstream (N=20)	8.30	2.55	
Similarities	Bilingual (N=20)	9.00	3.23	1.40
	Mainstream (N=20)	10.30	2.62	
Vocabulary	Bilingual (N=20)	9.30	2.70	1.51
	Mainstream (N=20)	10.65	2.96	
Picture Completion	Bilingual (N=20)	9.70	3.01	.11
	Mainstream (N=20)	9.80	2.67	
Picture Arrangement	Bilingual (N=20)	7.40	3.34	2.15*
	Mainstream (N=20)	9.65	3.28	
Block Design	Bilingual (N=20)	7.80	3.44	1.28
	Mainstream (N=20)	9.10	2.97	
Object Assembly	Bilingual (N=20)	8.10	3.24	2.00
	Mainstream (N=20)	10.05	2.93	
Coding	Bilingual (N=20)	9.30	2.74	1.32
	Mainstream (N=20)	10.40	2.52	

\*Significant at  $p < .05$ , exceeds critical of  $p < .05 = 2.021$

\*\* $p < .01$



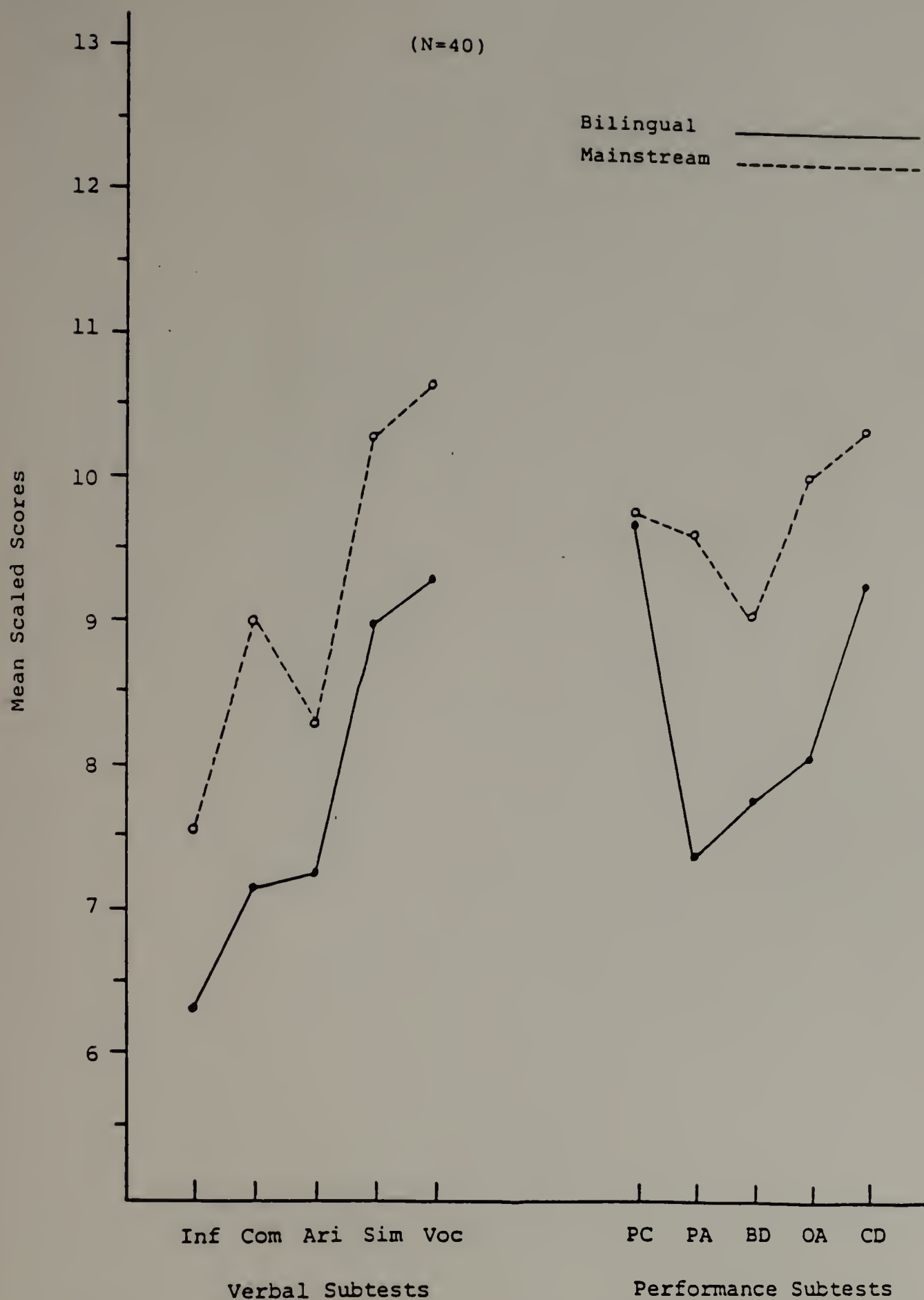


Figure 13. A Comparison of the Spanish WISC Subtest Patterns between the Fifth Grade Pupils of Both Programs.

### Summary of Findings

A series of 60 t-tests (ten for each study) was used to test the significance of the differences between means for each of the ten subtests of the Spanish WISC. One of the major goals of this study was to go beyond the Full-Scale, Verbal, and Performance IQ's and to investigate the subtest scatter between monolingual and bilingual children. The study compared programs, all boys, all girls, and grade levels three through five.

This study confirms and expands the previous findings of the first six hypotheses. The results showed that most of the Verbal Scale mean subtest scores were statistically significant between programs, between all girls, and between fourth graders, with the mainstream group achieving higher scores than the bilingual groups in all comparisons. This was also true for all boys of both programs. In the third grade study, it may be discerned that subtest scores were almost identical, with the anomalous exception of the Block Design and Information subtests. Interestingly, analysis of the data for the fifth grade subjects showed significant differences on only two of the ten subtests.

It should be stressed that until research is replicated with a much larger sample, data relative to this exploratory study should be applied cautiously, with no inferences drawn about deficit scores isolated between either of these two subsamples.

## The Self-Concept Study

### Frequency Distributions

Table 21 presents frequency distributions for the two samples on the variable of self-concept. Absolute frequencies were tallied and classified according to measurement intervals of low (lowest score through 45), average (46 through 60), and high (61 through highest), for each sample. These computed frequencies were then transformed into percentages for the purpose of comparing the two distributions. Table 21 gives an overview of the programs and category levels for each subgroup for total positive self-concept scores.

The comparative statistics found in this study show that 46.7% of the bilingual sample and 38.8% of the mainstream sample fell within an average range of self-concept. Consistent with expectations, both samples yielded similar high scores, with 48.3% of the bilingual sample and 51.7% of the mainstream sample falling within the average range.

The findings of this study suggest that monolingual children in the bilingual program have at least the same, if not higher, self-concepts than bilingual children in the mainstream program. The mainstream program had more scores in the highest range, children in the bilingual program had more scores in the average range, and those in the mainstream program had more scores in the lowest range.



Finally, further analysis of the P-HCSCS scores were computed using analysis of variance to test the hypotheses of significant differences for the variables of programs, grades, and sex. The means and standard deviations for programs and grades are presented in Table 23 and between and within the sexes in Tables 25a and 25b. In addition, eight further hypotheses testing the significance of the differences among means between the Factor Scales and the three independent variables were also assessed, using a series of t-tests. These data are summarized in Tables 26 through 33.

Table 21

Frequency Distributions of the Self-Concept Scores  
between the Bilingual and Mainstream Programs

(N=120)

Program	Code	Category Level	Absolute Frequency	Relative Frequency Percentage
Bilingual	1	High	N=29	48.3%
	2	Average	N=28	46.7%
	3	Low	N= <u>3</u>	<u>5.0%</u>
		<u>Total</u>	60	100.0%
Mainstream	1	High	N=31	51.7%
	2	Average	N=23	38.3%
	3	Low	N= <u>6</u>	<u>10.0%</u>
		<u>Total</u>	60	100.0%

\*Legend

Total Positive Self-Concept Scores

1. High = (61 through highest)
2. Average = (46 through 60)
3. Low = (lowest through 45)

### Hypothesis XIII

There is a statistically significant difference in self-concept between the two subgroups of Spanish-speaking children among the grades and programs, measured by the Spanish version of the P-HCSCS.

A 2 x 3 analysis of variance was used to test this hypothesis. The total positive self-concept score formed the dependent variable while programs and grades formed the independent variables. Inspection of these data, shown below in Table 22, revealed no significant F ratio for either of the two independent variables, and thus, Hypothesis XIII was not supported.

Table 22

H<sub>13</sub>: Summary of Two-Way Analysis of Variance for the Variable of Self-Concept

Source	df	Sum of Squares	Mean Squares	F
Main Effects (A&B)	3	451.450	150.483	2.145
Programs (A)	1	34.133	34.133	.487
Grades (B)	2	417.317	208.658	2.975
Interaction (AxB)	2	224.517	112.258	1.600
Error	114	7,996.000	70.140	
Total	119	8,671.967		

\*Significant at  $p < .05$ , exceeds critical of  $p < .05 = 3.08$

\*\* $p < .01$



### Comparisons between Grades

Since no statistical significant differences were found for programs or grades, the scores were pooled for normative purposes, and thus, means and standard deviations are presented in Table 23. This exploratory data may have considerable use in subsequent studies aimed at establishing normative data with Puerto Rican children.

As shown in Table 23, means were similar in magnitude between programs for grades three through five. Means for the bilingual and mainstream groups were 59.85 and 58.78, respectively. These results are in agreement with findings reported by Piers and Harris (1969) and Lewis (1984).

Table 23

Means and Standard Deviations of Self-Concept Scores for Programs by Grades

Subgroups	Program	Mean	SD
Grade Three:	Bilingual (N=20)	57.80	9.25
	Mainstream (N=20)	57.55	8.09
Grade Four:	Bilingual (N=20)	64.30	5.50
	Mainstream (N=20)	59.55	9.42
Grade Five:	Bilingual (N=20)	57.45	7.39
	Mainstream (N=20)	59.25	9.81
Programs:	Bilingual (N=60)	59.85	8.06
	Mainstream (N=60)	58.78	9.02

### Hypothesis XIV

There is a statistically significant difference in self-concept between sex of participants and the two educational programs, measured by the Spanish version of the P-HCSCS.

A 2 x 2 analysis of variance was used to analyze the results of this hypothesis. The total positive self-concept score formed the dependent variable while programs and sex of participants formed the independent variables. Results of this analysis revealed no significant F ratio for either of the two independent variables, and thus, Hypothesis XIV was not supported.

Table 24

$H_{14}$ : Summary of Two-Way Analysis of Variance for the Variable of Self-Concept

Source	df	Sum of Squares	Mean Squares	F
Main Effects (A&B)	2	37.467	18.733	.253
Programs (A)	1	34.133	34.133	.460
Sex of Participants (B)	1	3.333	3.333	.045
Interaction (AxB)	1	32.033	32.033	.432
Error	116	8,602.467	74.159	
Total	119	8,671.967		

\*Significant at  $p < .05$ , exceeds critical of  $p < .05 = 3.08$

\*\* $p < .01$

### Comparisons between and within the Sexes

As indicated in Table 24, there were no significant differences between the programs or between the sexes, and no significant interaction effects. Therefore, since the independent variables of programs and sex of participants failed to approach an acceptable level of significance, it can be concluded that the self-concept is not significantly different between the programs or between the sexes. Thus, further analyses was undertaken to ascertain the means and standard deviations between and within the sexes. As shown in Tables 25a and 25b, the descriptive data from this study reveals similar means between and within the sexes and nonsignificant  $t$ -tests when the sex factor is controlled. Hence, contrary to predictions, the girls did not differ from the boys relative to the self-concept. These findings are consistent with Hypothesis XIV.



Table 25a

Means and Standard Deviations of Self-Concept Scores  
between Sex of Participants by Programs

Programs	Subgroups		Mean	SD
Bilingual	Boys	(N=30)	60.20	8.81
	Girls	(N=30)	59.50	7.37
Mainstream	Boys	(N=30)	58.10	10.50
	Girls	(N=30)	59.47	7.38

Table 25b

Means, Standard Deviations, and t-tests for Self-Concept  
Scores when the Sex Factor Is Controlled

Programs	Subgroups		Mean	SD	t
Bilingual	Boys	(N=30)	60.20	8.81	.84
Mainstream	Boys	(N=30)	58.10	10.50	
Bilingual	Girls	(N=30)	59.50	7.37	.02
Mainstream	Girls	(N=30)	59.47	7.38	

\*Significant at  $p < .05$ , exceeds critical of  $p < .05 = 2.000$

\*\* $p < .01$

### Summary of Findings

Considered together, the findings of the preceding two-way analysis of variance factorial designs revealed that in both hypotheses, the  $F$ 's were nonsignificant. Contrary to expectations, this finding indicates that no significant differences were yielded between the programs, grades, or sexes on the dependent variable of self-concept. Similarly, the evidence presented in this study suggests that the self-concept among Puerto Rican children does not vary significantly between the bilingual or mainstream programs.

In spite of the fact that significant differences were not found among the foregoing analyses, means and standard deviations were computed between grades and between and within the sexes to ascertain the direction of difference. These data revealed that mean scores were similar between grades and between the sexes, and that the boys did not differ significantly from the girls on these dimensions. This finding provides support to confirm the research of Gordon and Wood (1963), Piers and Harris (1969), Soares and Soares (1969), Milgram and Milgram (1976) and Chang (1976), who also found that as a group, sex differences were not significant on the variable of the self-concept.

Conversely, it appears that the findings of this study contradict those of several other investigators (Greene and Zirkel, 1971; Rodriguez, 1972), who presented evidence that Spanish-speaking children of Mexican-American and Puerto

Rican backgrounds showed a higher self-concept whenever they were assessed in a minority-majority representation. These findings further suggest that the self-concept is a complex phenomenon within the area of bilingualism, and both applied and basic research have yet to confirm or disconfirm these alternative findings.

Finally, in order to explore further the variable of the self-concept, the following hypotheses were used to test the significance of the difference among means for the six separate Factor Scales. The focus of this study was to go beyond the total positive self-concept score and to explore scatter patterns between bilingual and mainstream groups. Means and standard deviations were computed for each of the following scales: Behavior, Intellectual and School Status, Physical Appearance and Attributes, Anxiety, Popularity, and Happiness and Satisfaction. Following this procedure, a series of t-tests were then computed to investigate the differences between means among each of the Factor Scales.

To better present data, graphic illustrations were designed for each study. These visual data are presented in Figures 14 through 22.



## Factor Scales

### Hypothesis XV

There is a statistically significant difference in self-concept among the six separate Factor Scales of the Spanish version of the P-HCSCS between the two subgroups of pupils in the two educational programs.

### Between Programs

The analysis presented in Table 26 revealed that the data derived from the six separate Factor Scales failed to reach statistical significance, and thus, Hypothesis XV was not supported.

As shown in Table 26, mean cluster scores were similar between the programs, with Factor III (Physical Appearance and Attributes) indicating the least amount of disparity between the means for these two samples.

To facilitate a better understanding of the data, mean cluster scores were plotted for each group and are presented in Figure 14. As shown in this graph, mean cluster scores were slightly higher for bilingual subjects on all Factors, except for IV (Anxiety) and VI (Happiness and Satisfaction). On these two Factors, the mainstream group rated themselves slightly higher.

Table 26

Means, Standard Deviations, and t-Values for Factor Scales  
between the Bilingual and Mainstream Programs

Factors	Programs	Mean	SD	t
I Behavior	Bilingual (N=60)	12.68	2.20	1.66
	Mainstream (N=60)	11.93	2.73	
II Intellectual and School Status	Bilingual (N=60)	13.87	2.35	.99
	Mainstream (N=60)	13.47	2.17	
III Physical Appearance and Attributes	Bilingual (N=60)	10.43	2.12	.30
	Mainstream (N=60)	10.32	2.13	
IV Anxiety	Bilingual (N=60)	9.27	2.22	.53
	Mainstream (N=60)	9.52	2.89	
V Popularity	Bilingual (N=60)	7.82	1.57	.95
	Mainstream (N=60)	8.12	1.89	
VI Happiness and Satisfaction	Bilingual (N=60)	8.65	1.32	.63
	Mainstream (N=60)	8.80	1.30	
Total Positive Self-Concept Scores Between Programs	Bilingual (N=60)	59.85	8.06	
	Mainstream (N=60)	58.78	9.02	

\*Significant at  $p < .05$ , exceeds critical of  $p < .05 = 1.980$

\*\* $p < .01$

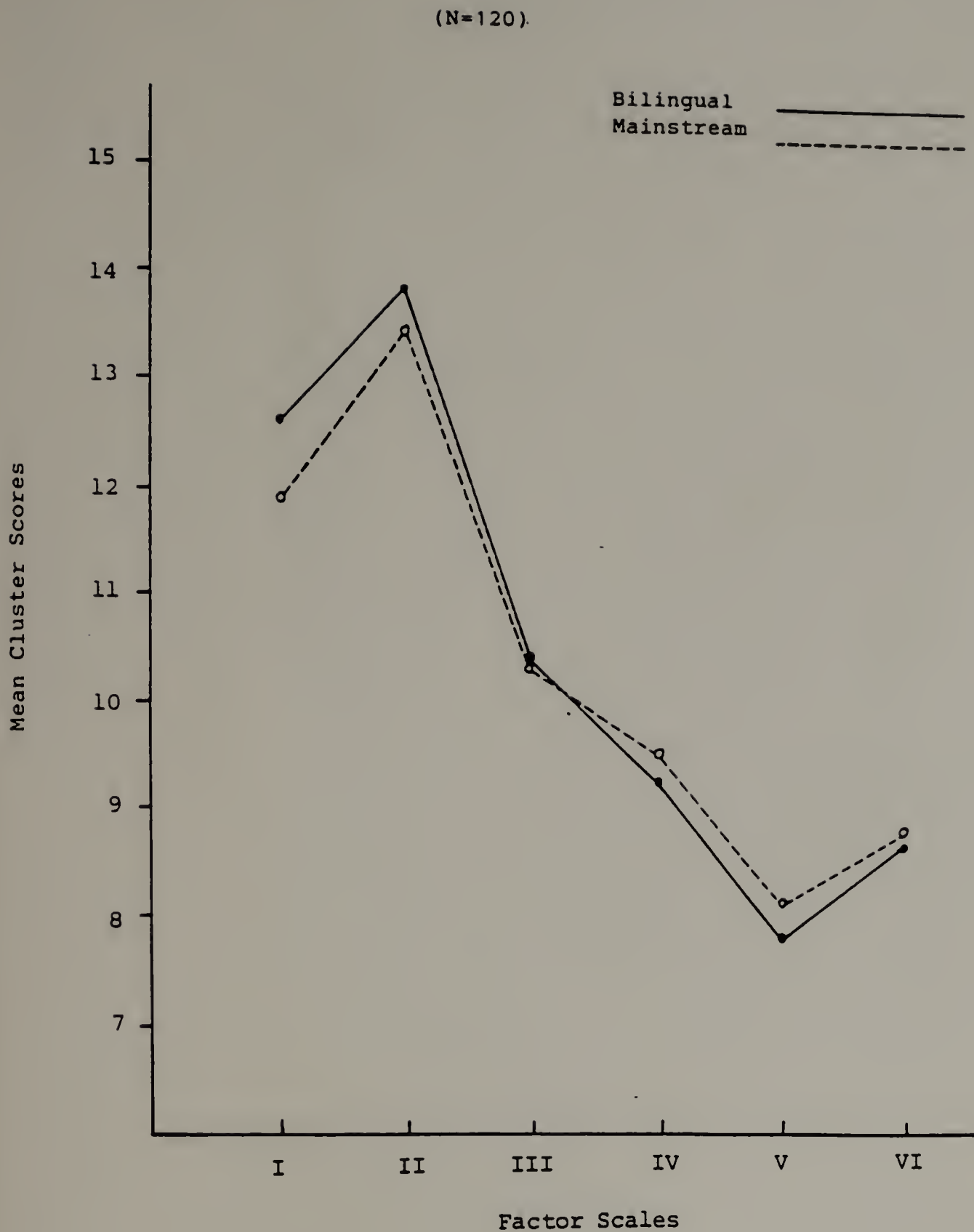


Figure 14. A Comparison of the Mean Self-Concept Cluster Scores between the Bilingual and Mainstream Programs.



### Hypothesis XVI

There is a statistically significant difference in self-concept among the six separate Factor Scales of the Spanish version of the P-HCSCS between third grade students in the two educational programs.

#### Between Third Grade Pupils

Reported in Table 27 are the descriptive statistics for the two groups of third grade pupils as well as the level of significance for each of the t-tests. As can be seen, all t-tests failed to achieve significance at the .05 level, necessitating a rejection of Hypothesis XVI.

The data strongly supports the hypothesis by showing that the total positive self-concept mean scores for third grade bilingual and mainstream groups were 57.80 and 57.55, respectively. This implies that the self-concept is not significantly different for third grade pupils between the bilingual and mainstream programs.

Profile patterns for these two subgroups are presented in Table 15. As depicted in this visual presentation, mean cluster scores were slightly higher for bilingual subjects on Factors I (Behavior), IV (Anxiety), and V (Popularity). In contrast, mainstream subjects had higher mean cluster scores on Factors II (Intellectual and School Status), III (Physical Appearance and Attributes), and VI (Happiness and Satisfaction).

Table 27

Means, Standard Deviations, and t-Values for Factor Scales  
between the Third Grade Pupils of Both Programs

Factors	Programs	Mean	SD	t
I Behavior	Bilingual (N=20)	12.05	2.53	.37
	Mainstream (N=20)	11.75	2.63	
II Intellectual and School Status	Bilingual (N=20)	13.25	2.49	1.17
	Mainstream (N=20)	14.05	1.76	
III Physical Appearance and Attributes	Bilingual (N=20)	10.50	2.09	1.36
	Mainstream (N=20)	11.30	1.59	
IV Anxiety	Bilingual (N=20)	8.85	2.21	1.13
	Mainstream (N=20)	8.00	2.55	
V Popularity	Bilingual (N=20)	7.40	1.60	.11
	Mainstream (N=20)	7.35	1.35	
VI Happiness and Satisfaction	Bilingual (N=20)	8.10	1.71	1.92
	Mainstream (N=20)	9.00	1.21	
Total Positive Self-Concept Scores Between Third Graders	Bilingual (N=20)	57.80	9.25	
	Mainstream (N=20)	57.55	8.09	

\*Significant at  $p < .05$ , exceeds critical of  $p < .05 = 2.021$

\*\* $p < .01$

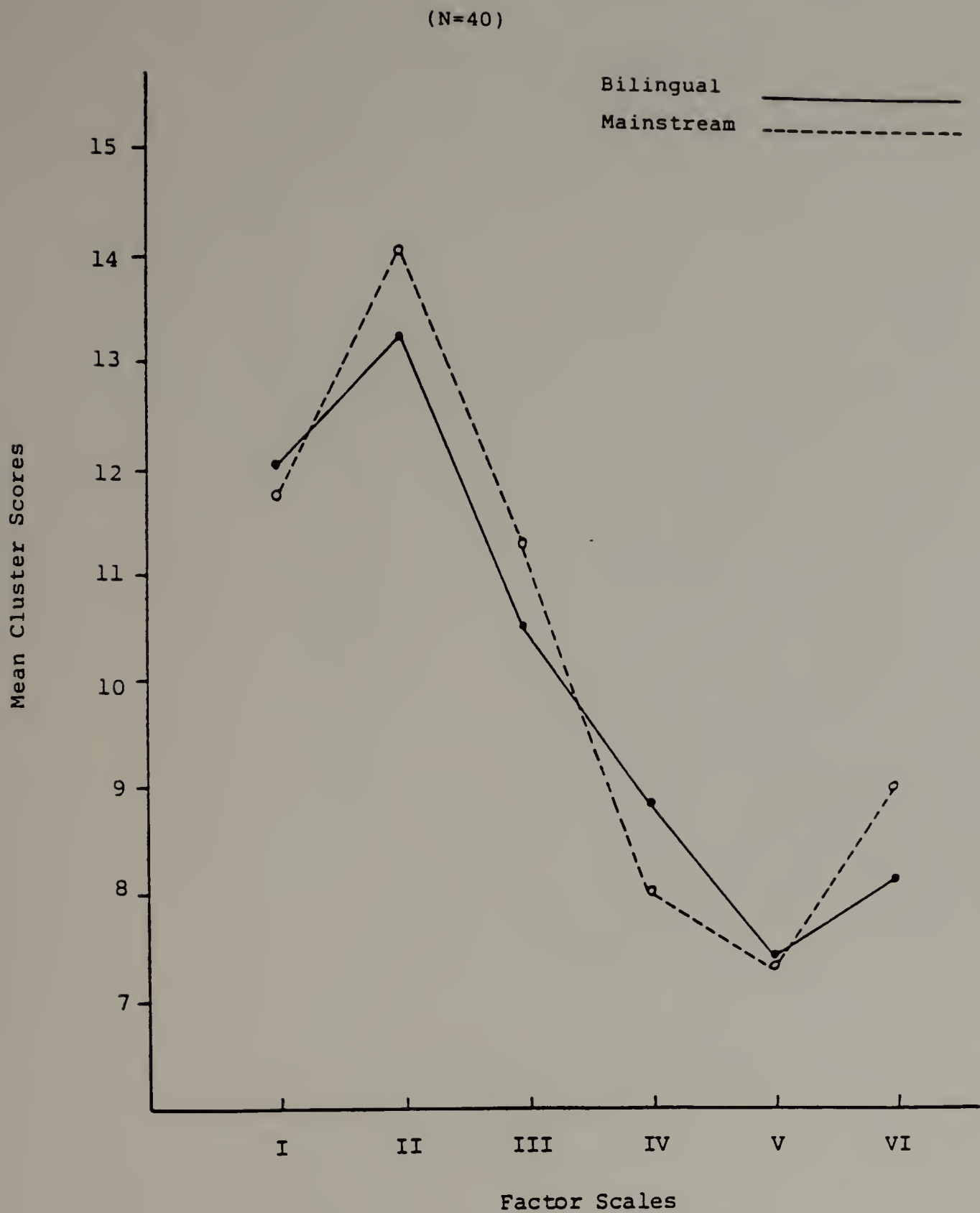


Figure 15. A Comparison of the Mean Self-Concept Cluster Scores between the Third Grade Pupils of Both Programs.

### Hypothesis XVII

There is a statistically significant difference in self-concept among the six separate Factor Scales of the Spanish version of the P-HCSCS between fourth grade students in the two educational programs.

#### Between Fourth Grade Pupils

As shown in Table 28, results from t-tests confirmed statistically significant differences on two of the six Factor Scales. Significant differences were found on Factors I (Behavior) ( $2.95 < .01$ ) and II (Intellectual and School Status) ( $3.25 < .01$ ). Thus, Hypothesis XVII was only partially supported.

Further inspection of Table 28 indicates that although the mean score differences favored the bilingual subjects on five of the six Factor Scales, the self-concept was not significantly different for bilingual and mainstream fourth grade subjects. The total positive self-concept scores for bilingual and mainstream subjects were 64.30 and 59.55, respectively.

Scatter patterns for these two subgroups are presented in Figure 16.



Table 28

Means, Standard Deviations, and t-Values for Factor Scales  
between the Fourth Grade Pupils of Both Programs

Factors	Programs	Mean	SD	t
I Behavior	Bilingual (N=20)	13.75	1.21	2.95**
	Mainstream (N=20)	11.90	2.53	
II Intellectual and School Status	Bilingual (N=20)	14.75	1.52	3.25**
	Mainstream (N=20)	13.15	1.60	
III Physical Appearance and Attributes	Bilingual (N=20)	11.10	1.59	1.45
	Mainstream (N=20)	10.10	2.63	
IV Anxiety	Bilingual (N=20)	9.80	1.94	.13
	Mainstream (N=20)	9.90	2.81	
V Popularity	Bilingual (N=20)	8.30	1.56	.08
	Mainstream (N=20)	8.25	2.24	
VI Happiness and Satisfaction	Bilingual (N=20)	9.15	.67	.99
	Mainstream (N=20)	8.85	1.18	
Total Positive Self-Concept Scores Between Fourth Graders	Bilingual (N=20)	64.30	5.50	
	Mainstream (N=20)	59.55	9.42	

\*Significant at  $p < .05$ , exceeds critical of  $p < .05 = 2.021$

\*\* $p < .01$

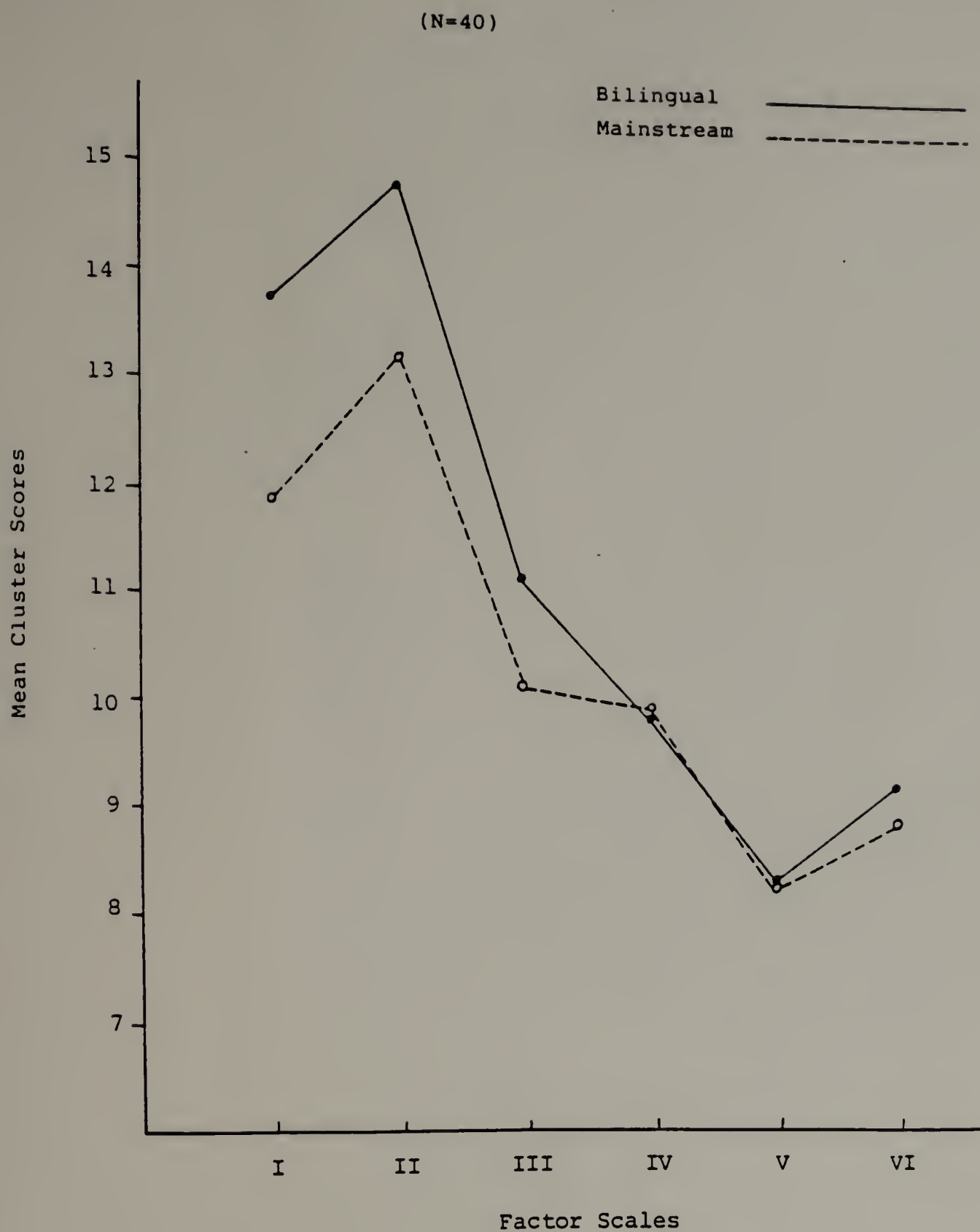


Figure 16. A Comparison of the Mean Self-Concept Cluster Scores between the Fourth Grade Pupils of Both Programs.

### Hypothesis XVIII

There is a statistically significant difference in self-concept among the six separate Factor Scales of the Spanish version of the P-HCSCS between fifth grade students in the two educational programs.

#### Between Fifth Grade Pupils

Reported in Table 29 are the results of t-tests showing no significant differences between the mean group scores of the six Factor Scales. Therefore, Hypothesis XVIII was not supported.

Inspection of the means for this study reveals that the bilingual subjects scored higher on Factors I (Behavior), II (Intellectual and School Status), III (Physical Appearance and Attributes), and VI (Happiness and Satisfaction). In contrast, the mainstream subjects scored higher on Factors IV (Anxiety) and V (Popularity). As can be seen in Table 29, these latter two Factors approached, but did not achieve statistical significance.

Scatter patterns for these two subgroups are displayed graphically in Figure 17.

Table 29

Means, Standard Deviations, and t-Values for Factor Scales  
between the Fifth Grade Pupils of Both Programs

Factors	Programs	Mean	SD	t
I Behavior	Bilingual (N=20)	12.25	2.31	.12
	Mainstream (N=20)	12.15	3.12	
II Intellectual and Social Status	Bilingual (N=20)	13.60	2.70	.45
	Mainstream (N=20)	13.20	2.91	
III Physical Appearance and Attributes	Bilingual (N=20)	9.70	2.45	.22
	Mainstream (N=20)	9.55	1.73	
IV Anxiety	Bilingual (N=20)	9.15	2.48	1.81
	Mainstream (N=20)	10.65	2.76	
V Popularity	Bilingual (N=20)	7.75	1.48	1.93
	Mainstream (N=20)	8.75	1.77	
IV Happiness and Satisfaction	Bilingual (N=20)	8.70	1.22	.35
	Mainstream (N=20)	8.55	1.50	
Total Positive Self-Concept Scores Between Fifth Graders	Bilingual (N=20)	57.45	7.39	
	Mainstream (N=20)	59.25	9.81	

\*Significant at  $p < .05$ , exceeds critical of  $p < .05 = 2.021$

\*\* $p < .01$



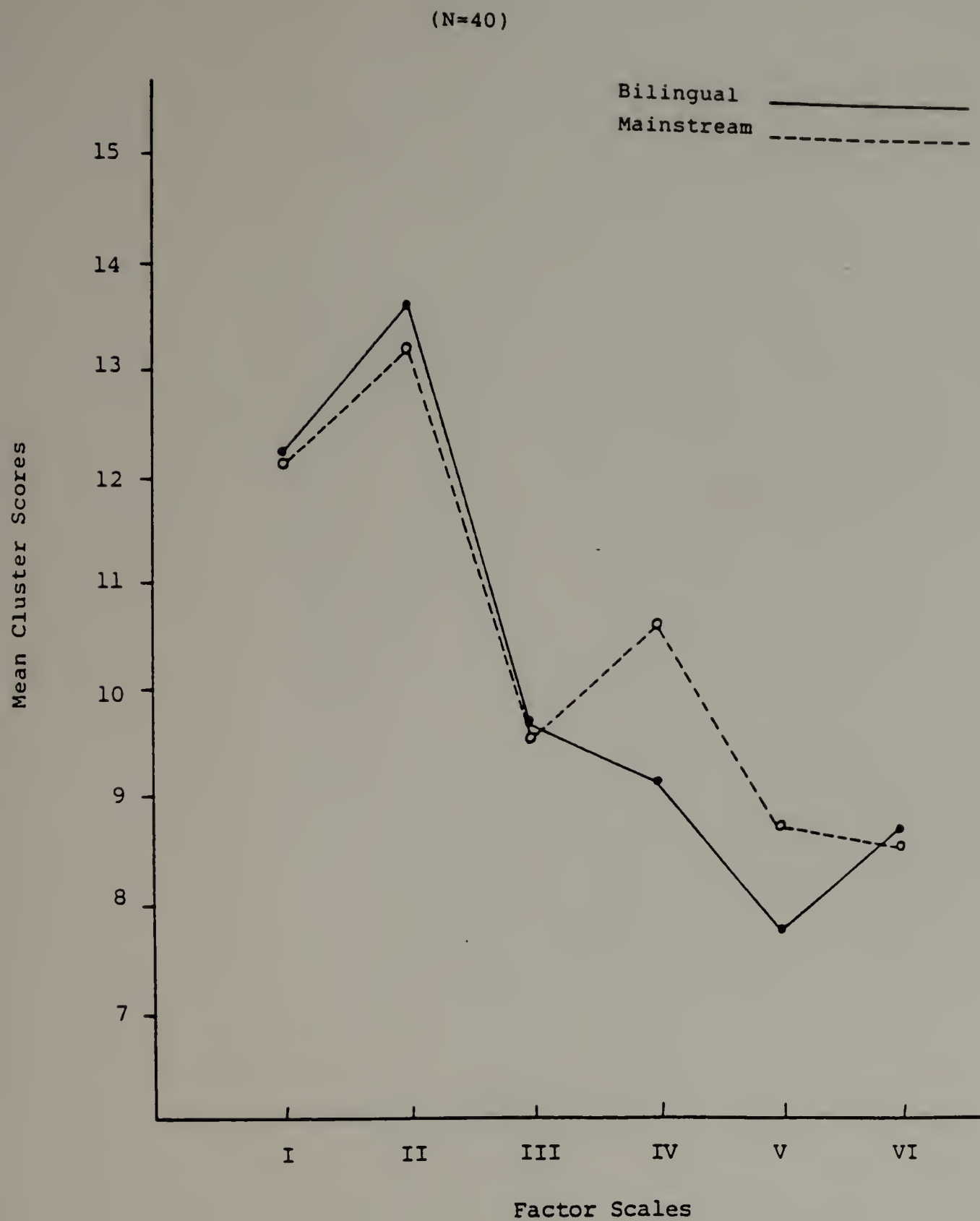


Figure 17. A Comparison of the Mean Self-Concept Cluster Scores between the Fifth Grade Pupils of Both Programs.

### Hypothesis XIX

There is a statistically significant difference in self-concept among the six separate Factor Scales of the Spanish version of the P-HCSCS between boys and girls in the bilingual program.

#### Bilingual Program: Between Boys and Girls

Reported in Table 30 are the descriptive statistics between boys and girls in the bilingual program. As can be seen, the results of t-tests indicated a statistically significant difference for only one Factor. Therefore, Hypothesis XIX was only weakly supported.

As Table 30 indicates, a significant difference was found only for Factor IV (Anxiety) ( $2.03 < .05$ ), with boys scoring significantly higher than girls. Interestingly, boys rated themselves higher on Factors I (Behavior), IV (Anxiety), and V (Popularity), while girls rated themselves higher on Factors II (Intellectual and School Status), III (Physical Appearance and Attributes), and VI (Happiness and Satisfaction).

Scatter patterns for these two subgroups are presented in Figure 18.

Table 30

Means, Standard Deviations, and t-Values for Factor Scales  
between Boys and Girls in the Bilingual Program

Factors	Sex of Participants	Mean	SD	t
I Behavior	Boys (N=30)	12.80	2.01	.41
	Girls (N=30)	12.57	2.40	
II Intellectual and School Status	Boys (N=30)	13.83	2.38	.11
	Girls (N=30)	13.90	2.35	
III Physical Appearance and Attributes	Boys (N=30)	10.07	2.46	1.35
	Girls (N=30)	10.80	1.67	
IV Anxiety	Boys (N=30)	9.83	1.86	2.03*
	Girls (N=30)	8.70	2.42	
V Popularity	Boys (N=30)	7.87	1.33	.25
	Girls (N=30)	7.77	1.79	
VI Happiness and Satisfaction	Boys (N=30)	8.33	1.54	1.89
	Girls (N=30)	8.97	1.00	
Total Positive Self-Concept Scores Between Boys and Girls in the Bilingual Program	Boys (N=30)	60.20	8.81	
	Girls (N=30)	59.50	7.37	

\*Significant at  $p < .05$ , exceeds critical of  $p < .05 = 2.000$

\*\* $p < .01$

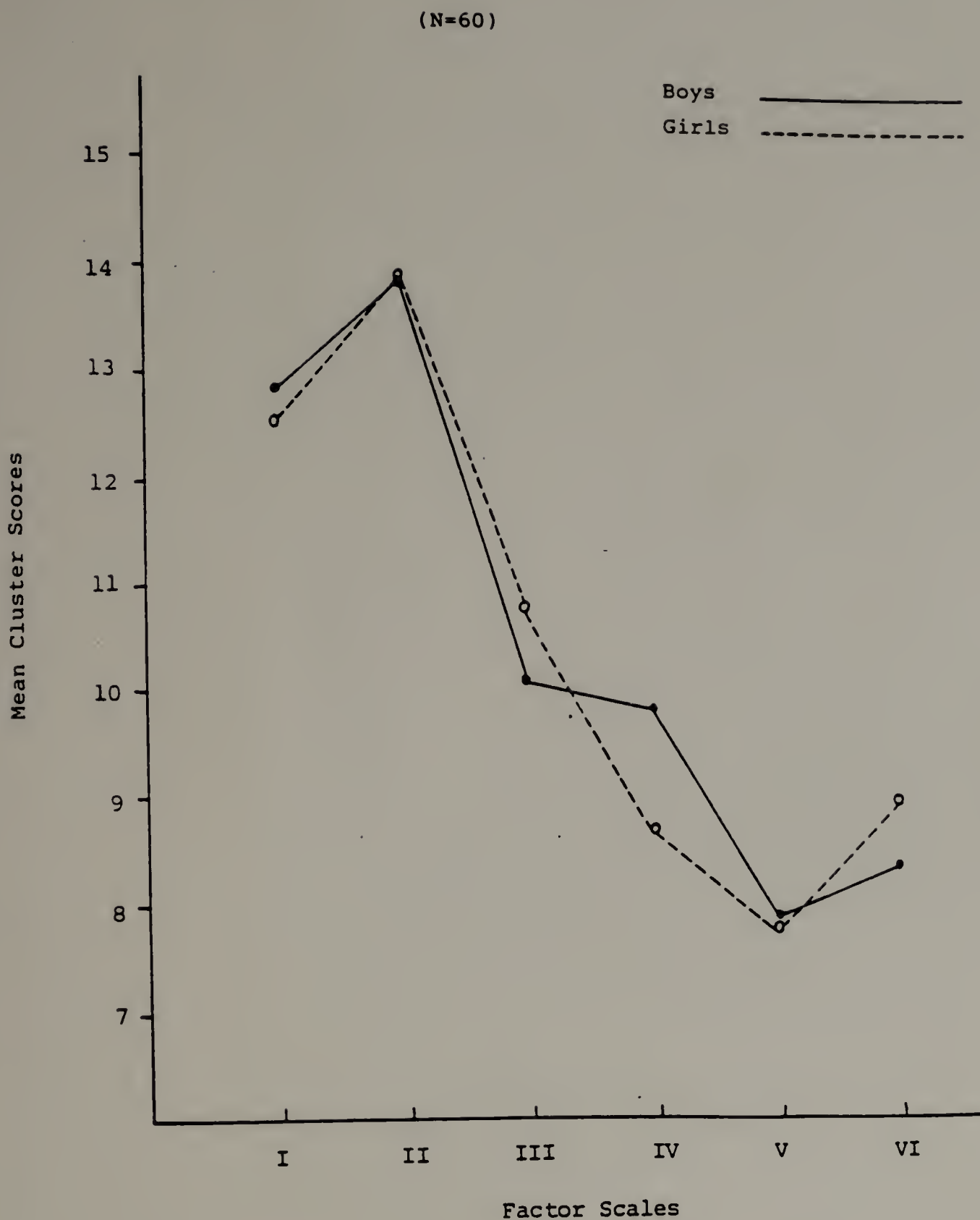


Figure 18. A Comparison of the Mean Self-concept Cluster Scores between Boys and Girls in the Bilingual Program.



### Hypothesis XX

There is a statistically significant difference in self-concept among the six separate Factor Scales of the Spanish version of the P-HCSCS between boys and girls in the mainstream program.

#### Mainstream Program: Between Boys and Girls.

Presented in Table 31 are the descriptive statistics between boys and girls in the mainstream program. As can be seen, the results from t-tests indicated a statistically significant difference for only one Factor. Therefore, Hypothesis XX was only weakly supported.

As reported in Table 31, a significant difference was found only for Factor I (Behavior) ( $2.57 < .05$ ), with girls scoring significantly higher than boys. In point of fact, mean score differences favored the girls on three of the five remaining Factor Scales, with the noted exception of Factors III (Physical Appearance and Attributes) and IV (Anxiety), on which boys earned higher scores. As can be seen from Table 31, mean scores were similar between the sexes, with the least amount of disparity noted on Factor V (Popularity).

These results are displayed graphically in Figure 19. As depicted by the profile patterns, mean cluster scores were higher for girls on four of the six Factor Scales.

Table 31

Means, Standard Deviations, and t-Values for Factor Scales  
between Boys and Girls in the Mainstream Program

Factors	Sex of Participants	Mean	SD	t
I Behavior	Boys (N=30)	11.07	3.03	2.57*
	Girls (N=30)	12.80	2.11	
II Intellectual and School Status	Boys (N=30)	13.27	2.45	.71
	Girls (N=30)	13.67	1.88	
III Physical Appearance and Attributes	Boys (N=30)	10.43	1.99	.42
	Girls (N=30)	10.20	2.29	
IV Anxiety	Boys (N=30)	10.13	3.21	1.68
	Girls (N=30)	8.90	2.43	
V Popularity	Boys (N=30)	8.03	2.09	.34
	Girls (N=30)	8.20	1.69	
VI Happiness and Satisfaction	Boys (N=30)	8.70	1.32	.59
	Girls (N=30)	8.90	1.30	
Total Positive Self-Concept Scores Between Boys and Girls in the Mainstream Program	Boys (N=30)	58.10	10.50	
	Girls (N=30)	59.47	7.38	

\*Significant at  $p < .05$ , exceeds critical of  $p < .05 = 2.000$

\*\* $p < .01$

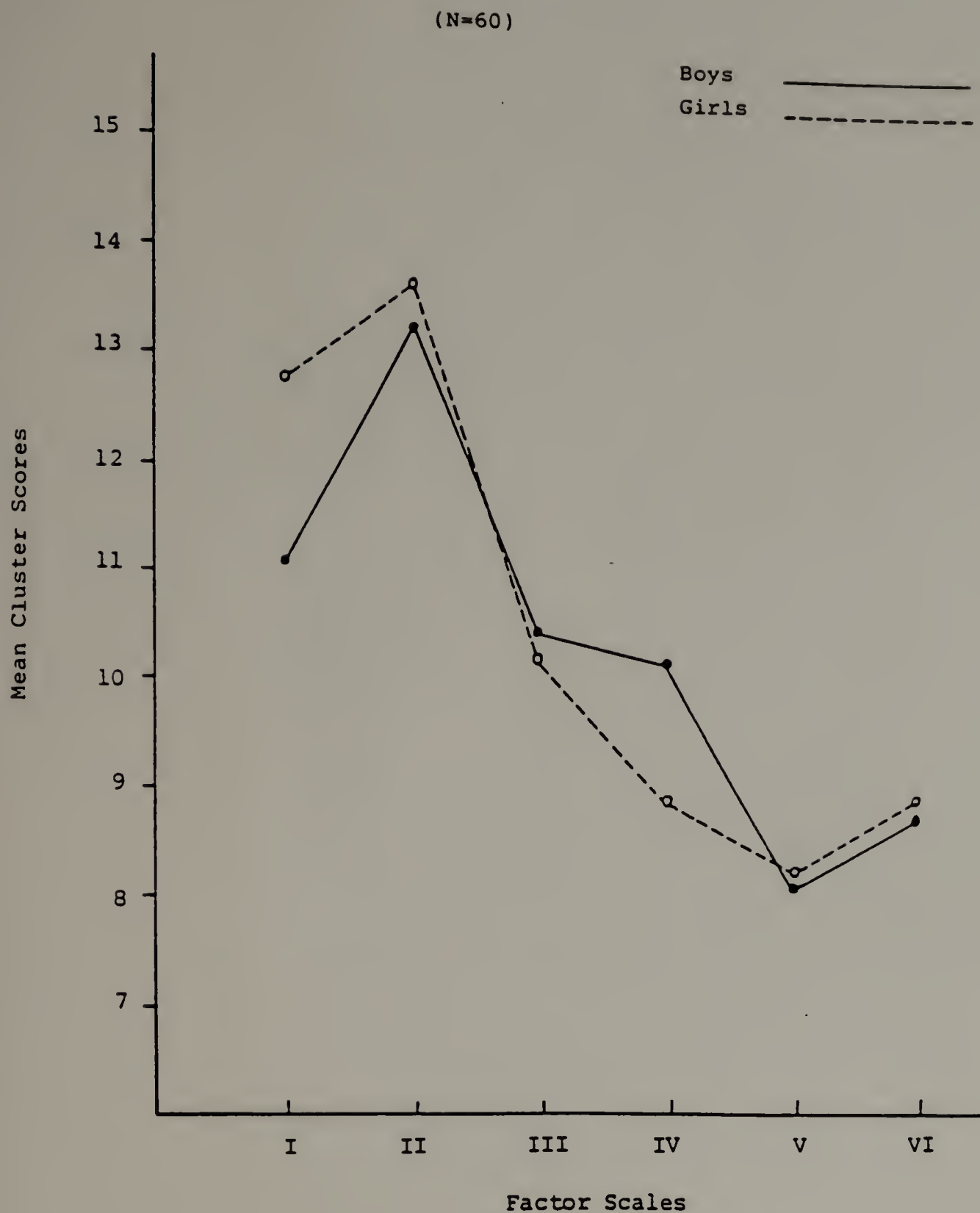


Figure 19. A Comparison of the Mean Self-Concept Cluster Scores between Boys and Girls in the Mainstream Program.

### Hypothesis XXI

There is a statistically significant difference in self-concept among the six separate Factor Scales of the Spanish version of the P-HCSCS between the total sample of boys in the two educational programs.

#### Between Boys

As presented in Table 32, results from t-tests revealed a statistically significant difference between all boys of both programs for only one Factor. Therefore, Hypothesis XXI was only weakly supported.

As can be seen in Table 32, a significant difference was obtained only for Factor I (Behavior) ( $2.61 < .05$ ), with the bilingual group scoring significantly higher than the mainstream group. Further inspection of these data also shows that although the bilingual group scored higher than their mainstream counterparts on Factors I (Behavior) and II (Intellectual and School Status), the remaining four scales, however, favored the mainstream group. Overall, the total positive self-concept scores for bilingual and mainstream boys were 60.20 and 58.10, respectively.

Scatter patterns for these two subgroups are presented in Figure 20. As illustrated in this graph, the greatest amount of disparity was noted on Factor I (Behavior), with the bilingual boys scoring significantly higher than the mainstream boys.



Table 32

Means, Standard Deviations, and t-Values for Factor Scales  
between All Boys of Both Programs

Factors	Programs	Mean	SD	t
I Behavior	Bilingual (N=30)	12.80	2.01	2.61*
	Mainstream (N=30)	11.07	3.03	
II Intellectual and School Status	Bilingual (N=30)	13.83	2.38	.91
	Mainstream (N=30)	13.27	2.45	
III Physical Appearance and Attributes	Bilingual (N=30)	10.07	2.46	.63
	Mainstream (N=30)	10.43	1.99	
IV Anxiety	Bilingual (N=30)	9.83	1.86	.44
	Mainstream (N=30)	10.13	3.21	
V Popularity	Bilingual (N=30)	7.87	1.33	.37
	Mainstream (N=30)	8.03	2.09	
VI Happiness and Satisfaction	Bilingual (N=30)	8.33	1.54	.99
	Mainstream (N=30)	8.70	1.32	
Total Positive Self-Concept Scores Between All Boys of Both Programs	Bilingual (N=30)	60.20	8.81	
	Mainstream (N=30)	58.10	10.50	

\*Significant at  $p < .05$ , exceeds critical of  $p < .05 = 2.000$

\*\* $p < .01$

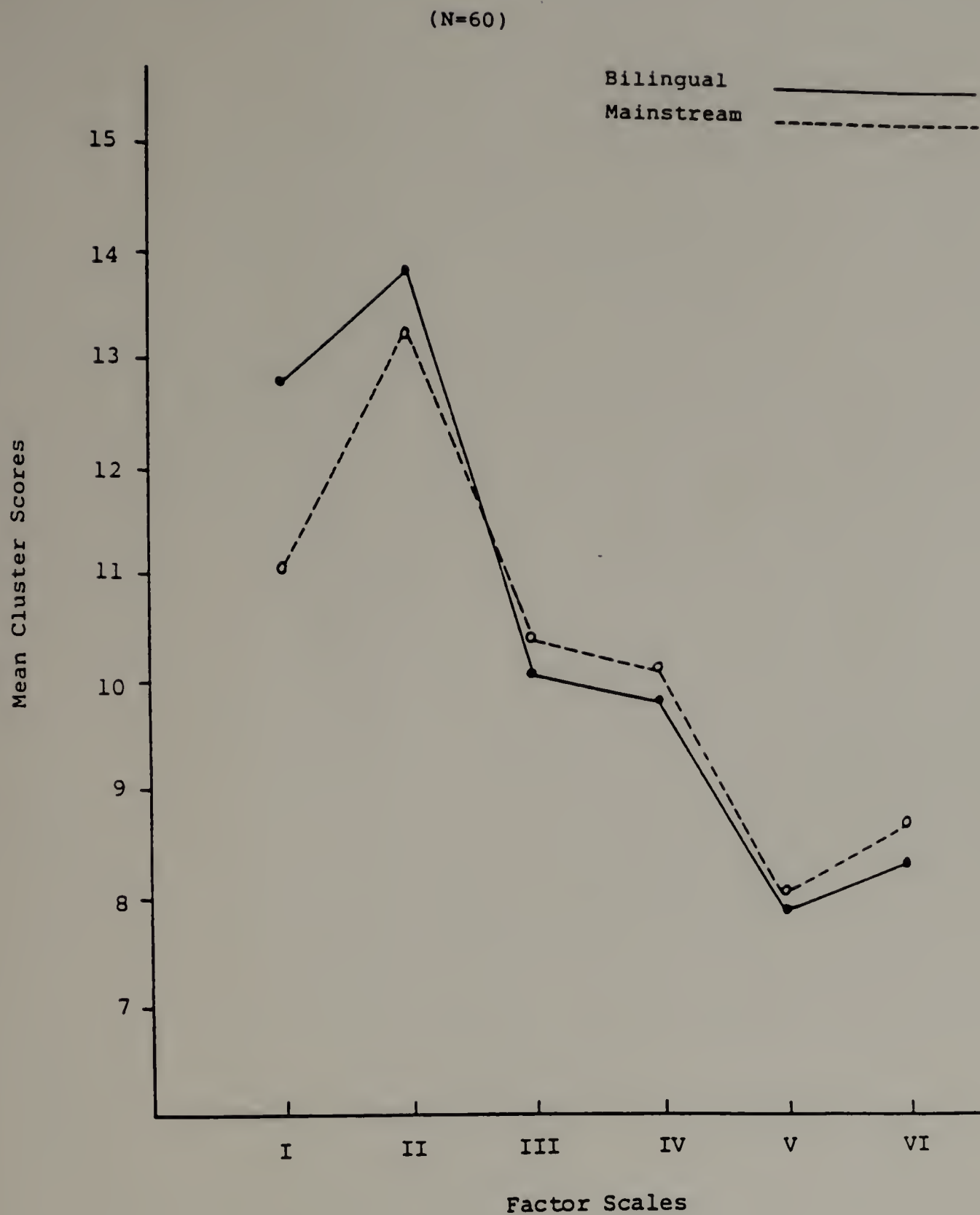


Figure 20. A Comparison of the Mean Self-Concept Cluster Scores between All Boys of Both Programs.

### Hypothesis XXII

There is a statistically significant difference in self-concept among the six separate Factor Scales of the Spanish version of the P-HCSCS between the total sample of girls in the two educational programs.

#### Between Girls

Presented in Table 33 are the descriptive statistics between all girls of both programs as well as the level of significance for each of the t-tests. From Table 33, it can be seen that all t-tests were nonsignificant at the .05 level necessitating a rejection of Hypothesis XXII.

Contrary to expectations, the data in Table 33 suggest that the t-tests do not interact appreciably to influence the magnitude of the test scores for the two subgroups of girls. Interestingly, the comparative research data illuminated in this study strongly suggest that the self-concepts of bilingual girls were nearly identical to that of the mainstream girls. The total positive self-concept scores for bilingual and mainstream girls were 59.50 and 59.47, respectively.

These results are displayed graphically in Figure 21. As shown in this graph, mean cluster scores were similar between both groups of girls on all six Factor Scales.

Table 33

Means, Standard Deviations, and t-Values for Factor Scales  
between All Girls of Both Programs

Factors	Programs	Mean	SD	t
I Behavior	Bilingual (N=30)	12.57	2.40	.40
	Mainstream (N=30)	12.80	2.11	
II Intellectual and School Status	Bilingual (N=30)	13.90	2.35	.42
	Mainstream (N=30)	13.67	1.88	
III Physical Appearance and Attributes	Bilingual (N=30)	10.80	1.67	1.16
	Mainstream (N=30)	10.20	2.29	
IV Anxiety	Bilingual (N=30)	8.70	2.42	.32
	Mainstream (N=30)	8.90	2.43	
V Popularity	Bilingual (N=30)	7.77	1.79	.96
	Mainstream (N=30)	8.20	1.69	
VI Happiness and Satisfaction	Bilingual (N=30)	8.97	1.00	.22
	Mainstream (N=30)	8.90	1.30	
Total Positive Self-Concept Scores Between All Girls of Both Programs	Bilingual (N=30)	59.50	7.37	
	Mainstream (N=30)	59.47	7.38	

\*Significant at  $p < .05$ , exceeds critical of  $p < .05 = 2.000$

\*\* $p < .01$



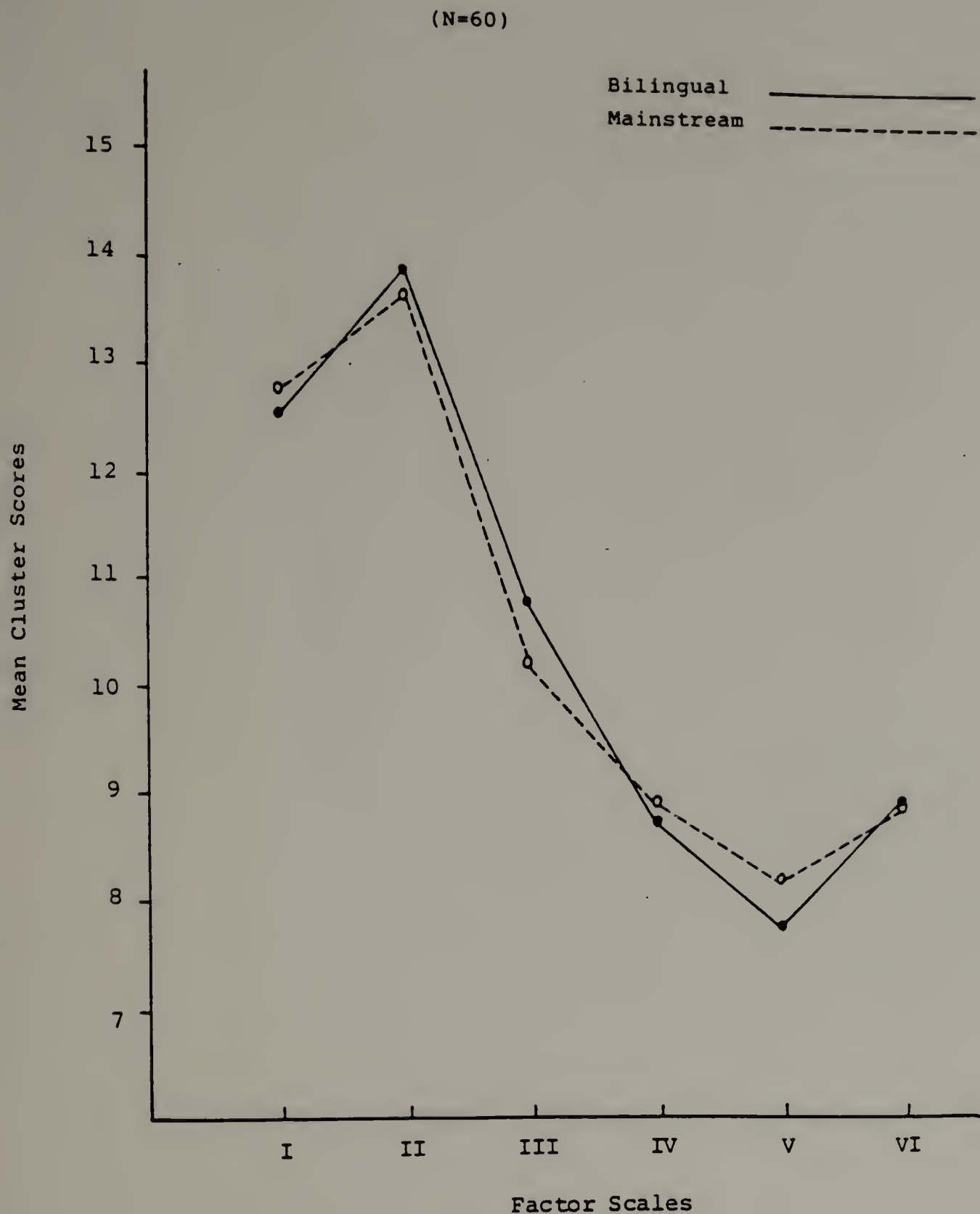


Figure 21. A Comparison of the Mean Self-Concept Cluster Scores between All Girls of Both Programs.

### Summary of Findings

The findings of this study were consistent with the results of the previous study. That is, no significant differences were obtained among the cluster scores between the two subgroups of both programs, between grades three and five, or between all girls of both programs.

In contrast, statistically significant differences were found between the fourth grade groups on Factors I (Behavior) and II (Intellectual and School Status), between the sexes in the bilingual program on Factor IV (Anxiety), between the sexes in the mainstream program on Factor I (Behavior), and between all boys of the two educational programs on Factor I (Behavior). No other comparisons differed significantly. The data analyzed in this study strongly suggest that monolingual children do not appear to be distinguishable from bilingual children with respect to self-concept, since estimates from cluster scores for all groups concerned were comparable in magnitude.

Lastly, taking a slightly different perspective, the remaining section of this chapter will have as its focus, the relationship of self-concept to intelligence among these two subgroups. The presence of statistically significant correlations between the Spanish WISC and the modified Spanish P-HCSCS are interpreted as suggesting a relationship between self-concept and intelligence, a major focus of this study.

## Relationships

### Hypothesis XXIII

A statistically significant relationship will exist between the total positive self-concept scores of the modified Spanish version of the P-HCSCS and the three measures of intelligence quotients of the Spanish WISC among the pupils in the two educational programs.

#### Between Programs

As presented in Table 34, the analysis of the Pearson product-moment correlations ( $r$ 's) reveal no statistically significant correlations between the total positive self-concept scores and the three intelligence quotients. Thus, Hypothesis XXIII was not supported.

The correlations between the six Factor Scales and the three intelligence quotients are also reported in Table 34. As indicated in these analyses, there was a statistically significant correlation between Factor II (Intellectual and School Status) with the Full-Scale scores ( $p < .05$ ) and the Verbal Scaled scores ( $p < .01$ ). In contrast, the remaining correlations were weakly intercorrelated and nonsignificant. Despite this limited amount of correlational evidence, the present findings suggest that across both subgroups, their ability to appraise their intellectual status appears fairly realistic in both educational programs.

In order to facilitate a better interpretation of the correlational analysis between the affective and cognitive

data, a graphical representation is presented in Figure 22. As indicated in this reduced computer-generated scattergram, each dot simultaneously represents each subject's location on the two dependent variables. That is, this configuration of plotted data diagrammatically illustrates the clustering of scores between the Spanish WISC's Full-Scale scores and the P-HCSCS total positive self-concept scores. As can be seen in Figure 22, there was a weak positive relationship between these two dependent variables among the subjects in the two educational programs. As shown in this scattergram, the plotted correlation ( $r = +.1299$ ) was congruent with the previous nonsignificant correlation found in Table 34.



(N=120)

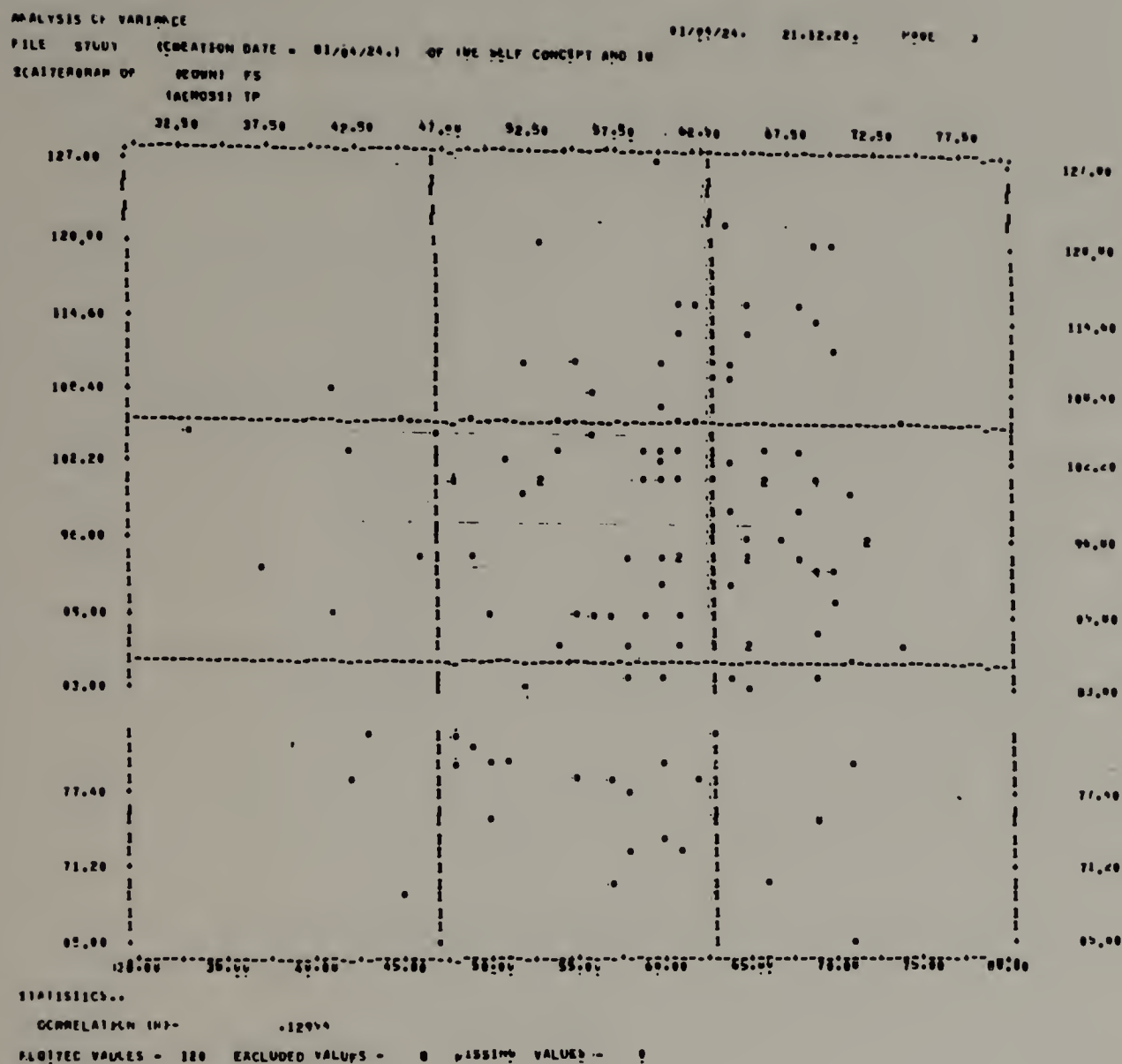


Figure 22. Pearson Correlation Coefficients between the Total Positive Self-Concept Scores of the P-HCSCS and the Full-Scale Scores of the Spanish WISC.

Table 34

Pearson Correlation Coefficients between the  
Spanish P-HCSCS and the Spanish WISC Measures  
for Bilingual and Mainstream Programs

(N=120)

Spanish Version of the P-HCSCS	Measures of Intelligence Spanish WISC		
	Full Scale	Verbal	Performance
Self-concept Total Scores	.1299	.1281	.1070
Factor Scales			
I Behavior	.0960	.0810	.0917
II Intellectual and School Status	.2140*	.2365**	.1455
III Physical Appearance and Attributes	.0582	.0402	.0592
IV Anxiety	.0525	.0452	.0511
V Popularity	.1234	.1311	.0945
VI Happiness and Satisfaction	.0685	.0675	.0536

\*Significant at  $p < .05$ , exceeds critical of  $p < .05 = .180$

\*\* $p < .01$

#### Hypothesis XXIV

A statistically significant relationship will exist between the total positive self-concept scores of the modified Spanish version of the P-HCSCS and the three measures of intelligence quotients of the Spanish WISC among the pupils in the bilingual program.

#### The Bilingual Program

As presented in Table 35, the analysis of the Pearson product-moment correlations indicated no statistically significant correlations between the total positive self-concept scores of the Spanish version of the P-HCSCS and the three intelligence measures of the Spanish WISC. Thus, Hypothesis XXIV was not supported. As shown in Table 35, the correlational analyses for these three IQ scales were essentially zero, with (r) values of  $-.00$ ,  $-.04$ , and  $+.03$ , respectively. This finding implies that there were virtually no relationships between the total positive self-concept scores with the Full-Scale IQ's, Verbal IQ's, or Performance IQ's.

The correlations between the six Factor Scales and the three intelligence measures are also presented in Table 35. As shown, virtually no relationships emerged between the six Factor Scales and the three intelligence measures.

Table 35

Pearson Correlation Coefficients between the  
Spanish P-HCSCS and the Spanish WISC Measures  
for the Bilingual Program

(N=60)

Spanish Version of the P-HCSCS	Measures of Intelligence Spanish WISC		
	Full-Scale	Verbal	Performance
Self-concept Total Scores	-.0030	-.0446	.0393
Factor Scales			
I Behavior	-.0321	-.1453	.0853
II Intellectual and School Status	.1243	.1497	.0753
III Physical Appearance and Attributes	-.0450	-.0271	-.0500
IV Anxiety	.0434	.0393	.0332
V Popularity	.0940	.1042	.0639
VI Happiness and Satisfaction	-.2233	-.1909	-.2092

\*Significant at  $p < .05$ , exceeds critical of  $p < .05 = .255$

\*\* $p < .01$



### Hypothesis XXV

A statistically significant relationship will exist between the total positive self-concept scores of the modified Spanish version of the P-HCSCS and the three measures of intelligence quotients of the Spanish WISC among the pupils in the mainstream program.

### The Mainstream Program

As presented in Table 36, the analysis of the Pearson product-moment correlations disclosed statistically significant correlations between the total positive self-concept scores with the Full-Scale scores and the Verbal Scaled scores. Therefore, Hypothesis XXV was supported. As shown in Table 36, correlation coefficients for these comparisons yielded low positive relationships for the three dependent variables. Interestingly, in this study, the Performance Scale failed to attain statistical significance.

With regard to the second study, Table 36 also shows eight statistically significant correlations among three of the six Factor Scales. According to this study, the correlation coefficients for Factor I (Behavior) were statistically significant with the Full-Scale scores and the Verbal Scaled scores. These correlations yielded a low positive relationship for the Full-Scale scores and a somewhat modest relationship for the Verbal Scaled scores. Correlations for Factor II (Intellectual and School Status) were statistically significant with all three intelligence

scales. These intercorrelations yielded modest positive relationships for the Full-Scale scores and the Verbal Scaled scores. The intercorrelation with the Performance Scale, however, was not quite as high and evidenced a low positive relationship. Similarly, Factor VI (Happiness and Satisfaction) correlated significantly with all three intelligence scales. These intercorrelations yielded low positive relationships with all three intelligence scales.

Taken as a whole, these data clearly show a persistent and significant relationship between the affective (self-concept) and cognitive (intelligence) domains for Factors I (Behavior), II (Intellectual and School Status), and VI (Happiness and Satisfaction). As can be seen in Table 36, these intercorrelations ranged from .28 to .44.

Table 36

Pearson Correlation Coefficients between the  
Spanish P-HCSCS and the Spanish WISC Measures  
for the Mainstream Program

(N=60)

Spanish Version of the P-HCSCS	Measures of Intelligence Spanish WISC		
	Full-Scale	Verbal	Performance
Self-concept Total Scores	.3230*	.3635**	.2124
Factor Scales			
I Behavior	.3267*	.4014**	.1797
II Intellectual and School Status	.4182**	.4424**	.2881*
III Physical Appearance and Attributes	.1998	.1411	.1960
IV Anxiety	.0363	.0251	.0477
V Popularity	.1099	.1168	.0882
VI Happiness and Satisfaction	.3682**	.3325**	.3194*

\*Significant at  $p < .05$ , exceeds critical of  $p < .05 = .255$

\*\* $p < .01$

### Hypothesis XXVI

A statistically significant relationship will exist between the total positive self-concept scores of the modified Spanish version of the P-HCSCS and the three measures of intelligence quotients of the Spanish WISC among the third grade pupils of both educational programs.

#### Third Grade Pupils

As presented in Table 37, none of the Pearson product-moment correlations between the total positive self-concept scores of the P-HCSCS and the three intelligence quotients of the Spanish WISC achieved statistical significance. Thus, Hypothesis XXVI was not supported. Though the correlations between these dependent variables were positive, none were significant.

Based on data analysis derived from the second study, a statistically significant correlation was obtained for only Factor II (Intellectual and School Status) with the Verbal Scale ( $p < .05$ ). None of the other correlations involving the Factor Scales with the intelligence scales attained significance; half of them hovered near zero. All correlations were positive, ranging from .02 to .36.



Table 37

Pearson Correlation Coefficients between the  
Spanish P-HCSCS and the Spanish WISC Measures  
for the Third Grade Pupils of Both Programs

(N=40)

Spanish Version of the P-HCSCS	Measures of Intelligence Spanish WISC		
	Full-Scale	Verbal	Performance
Self-concept Total Scores	.1625	.1239	.1618
Factor Scales			
I Behavior	.1043	.0502	.1377
II Intellectual and School Status	.3088	.3637*	.1554
III Physical Appearance and Attributes	.1404	.0770	.1661
IV Anxiety	.0761	.0275	.1209
V Popularity	.0866	.1101	.0528
VI Happiness and Satisfaction	.0931	.0874	.0646

\*Significant at  $p < .05$ , exceeds critical of  $p < .05 = .312$

\*\* $p < .01$

### Hypothesis XXVII

A statistically significant relationship will exist between the total positive self-concept scores of the modified Spanish version of the P-HCSCS and the three measures of intelligence quotients of the Spanish WISC among the fourth grade pupils of both educational programs.

#### Fourth Grade Pupils

As presented in Table 38, none of the Pearson product-moment correlations between the total positive self-concept scores of the P-HCSCS and the three intelligence quotients of the Spanish WISC achieved statistical significance. Thus, Hypothesis XXVII was not supported. As shown in Table 38, no relationships emerged between these dependent variables.

Based on data analysis derived from the second study, a statistically significant negative correlation was obtained for only Factor II (Intellectual and School Status) with the Verbal Scale ( $p < .05$ ). None of the remaining correlations attained significance; almost all of them hovered near zero.

Table 38

Pearson Correlation Coefficients between the  
Spanish P-HCSCS and the Spanish WISC Measures  
for the Fourth Grade Pupils of Both Programs

(N=40)

Spanish Version of the P-HCSCS	Measures of Intelligence Spanish WISC		
	Full-Scale	Verbal	Performance
Self-concept Total Scores	.0231	-.0191	.0620
Factor Scales			
I Behavior	-.0525	-.0627	-.0196
II Intellectual and School Status	-.2505	-.3440*	-.0887
III Physical Appearance and Attributes	-.0635	-.0978	-.0208
IV Anxiety	.0834	.0730	.0678
V Popularity	.2578	.2678	.1818
VI Happiness and Satisfaction	.0941	.0980	.0629

\*Significant at  $p < .05$ , exceeds critical of  $p < .05 = .312$

\*\* $p < .01$

### Hypothesis XXVIII

A statistically significant relationship will exist between the total positive self-concept scores of the modified Spanish version of the P-HCSCS and the three measures of intelligence quotients of the Spanish WISC among the fifth grade pupils of both educational programs.

#### Fifth Grade Pupils

With regard to fifth grade pupils, Table 39 indicated statistically significant correlations between the total positive self-concept scores with the Full-Scale scores and the Verbal Scaled scores. Therefore, Hypothesis XXVIII was supported. Further inspection of Table 39 indicates that in the correlational analysis of these dependent variables there was a low positive relationship for the Full-Scale scores and a somewhat modest relationship for the Verbal Scaled scores. The Performance Scale, however, showed a positive relationship, but failed to yield statistical significance.

Similarly, findings of the secondary study demonstrated statistically significant correlations among four of the six Factor Scales. In these analyses, statistically significant correlations were obtained between Factor I (Behavior) and Verbal scores, between Factors II (Intellectual and School Status) and IV (Anxiety) with Full-Scale scores and Verbal scores, and finally, between Factor V (Popularity) and Full-Scale scores. As can be seen in Table 39, these significant



correlations ranged from .31 to .50. Correlations between Factor II (Intellectual and School Status) with Full-Scale IQ's and Verbal Scale IQ's were .42 and .50, respectively. Based on the correlational data provided by this factor, there is sufficient support for the hypothesis that for fifth grade pupils there is a strong association between intellectual and school status and self-concept for both measures used in this study. In spite of the incongruent relationships suggested by negative correlations on Factor III (Physical Appearance and Attributes), more significant correlations emerged for this grade level than for the two previous grade levels.

From a statistical point of view, problematic in this study as well as the two previous studies, is the fact that the subgroups were very small and these findings may not withstand replication. Therefore, these comparisons among grade levels should be seen as tentative at best. As such, any inferences must be descriptive rather than explanatory.

Table 39

Pearson Correlation Coefficients between the  
Spanish P-HCSCS and the Spanish WISC Measures  
for the Fifth Grade Pupils of Both Programs

(N=40)

Spanish Version of the P-HCSCS	Measures of Intelligence Spanish WISC		
	Full-Scale	Verbal	Performance
Self-concept Total Scores	.3358*	.3858*	.2248
Factor Scales			
I Behavior	.3101	.3161*	.2339
II Intellectual and School Status	.4297**	.5011**	.2741
III Physical Appearance and Attributes	-.1165	-.0821	-.1271
IV Anxiety	.3123*	.3180*	.2421
V Popularity	.3372*	.3073	.3011
VI Happiness and Satisfaction	.1260	.1108	.1206

\*Significant at  $p < .05$ , exceeds critical of  $p < .05 = .312$

\*\* $p < .01$

### Hypothesis XXIX

A statistically significant relationship will exist between the total positive self-concept scores of the modified Spanish version of the P-HCSCS and the three measures of intelligence quotients of the Spanish WISC among all boys in the two educational programs.

#### Among All Boys

As presented in Table 40, none of the Pearson product-moment correlations between the total positive self-concept scores of the P-HCSCS and the three intelligence quotients of the Spanish WISC achieved statistical significance. Thus, Hypothesis XXIX was not supported. As shown in Table 40, no relationships emerged between these dependent variables.

Similarly, with respect to the second study, further inspection of Table 40 indicates no statistical significant correlations among the Factor Scales. These correlations ranged from zero to .16. Again, for whatever the reason, the lack of agreement between scores from these two instruments precludes the making of inferences about one instrument from the results of the other. How the affective and cognitive domains interact, particularly across Hispanic Puerto Rican male youngsters, is an area as yet unexplored. Obviously, both data sources are valuable and are related, but must be interpreted with great care.

Table 40

Pearson Correlation Coefficients between the  
Spanish P-HCSCS and the Spanish WISC Measures  
for All Boys of Both Programs

(N=60)

Spanish Version of the P-HCSCS	Measures of Intelligence Spanish WISC		
	Full-Scale	Verbal	Performance
Self-concept Total Scores	-.0087	.0298	-.0345
Factor Scales			
I Behavior	.0338	.0277	.0431
II Intellectual and School Status	.0876	.1628	.0027
III Physical Appearance and Attributes	.0319	.0694	-.0099
IV Anxiety	-.0511	-.0404	-.0466
V Popularity	.0328	.0449	.0210
VI Happiness and Satisfaction	.0890	.1336	.0241

\*Significant at  $p < .05$ , exceeds critical of  $p < .05 = .255$

\*\* $p < .01$



### Hypothesis XXX

A statistically significant relationship will exist between the total positive self-concept scores of the modified Spanish version of the P-HCSCS and the three measures of intelligence quotients of the Spanish WISC among all girls in the two educational programs.

#### Among All Girls

As shown in Table 41, the results of Pearson product-moment correlations indicated statistically significant correlations between the total positive self-concept scores with the Full-Scale scores and the Performance Scaled scores. Thus, Hypothesis XXX was supported. Further inspection of Table 41 revealed that the Verbal Scaled scores bordered on statistical significance, but the value of  $r$  did not exceed the critical level.

In terms of the second study, statistically significant correlations were obtained between Factor II (Intellectual and School Status) with all three intelligence quotients. The correlational data obtained was  $+0.35$  ( $p < .01$ ) for Full-Scale IQ's,  $+0.31$  ( $p < .05$ ) for Verbal Scale IQ's, and  $+0.32$  ( $p < .05$ ) for Performance IQ's, respectively.

Table 41

Pearson Correlation Coefficients between the  
Spanish P-HCSCS and the Spanish WISC Measures  
for All Girls of Both Programs

(N=60)

Spanish Version of the P-HCSCS	Measures of Intelligence Spanish WISC		
	Full-Scale	Verbal	Performance
Self-concept Total Scores	.3076*	.2495	.3115*
Factor Scales			
I Behavior	.1769	.1469	.1643
II Intellectual and School Status	.3545**	.3171*	.3242*
III Physical Appearance and Attributes	.0887	.0143	.1448
IV Anxiety	.1513	.1222	.1587
V Popularity	.2092	.2081	.1746
VI Happiness and Satisfaction	.0554	.0044	.1027

\*Significant at  $p < .05$ , exceeds critical of  $p < .05 = .255$

\*\* $p < .01$

### Summary of Findings

Summarizing these data, Pearson product-moment correlations were computed and analyzed for two separate studies. The preliminary study examined the correlations between the total positive self-concept scores of the modified Spanish version the P-HCSCS and the three intelligence quotients of the Spanish WISC. These analyses were undertaken in an effort to ascertain the degree of relationship between the Spanish P-HCSCS and the Spanish WISC. The secondary study, conducted strictly for the purposes of research, examined further the correlations between cluster scores from each of the six separate Factor Scales and the three intelligence quotients. The focus of this study was to go beyond the total positive self-concept scores and to explore in-depth the Factor Scales between monolingual and bilingual children.

A summary of the significant correlations found in this study is shown in Table 42. As shown by asterisks (used to indicate significance) delineated in Table 42, the results of the preliminary study revealed statistically significant correlations among three of the eight subgroups analyzed. Analysis of these data revealed significant correlations for the mainstream program, grade five, and among all girls with Full-Scale IQ's, for the mainstream program and grade five with Verbal IQ's, and among all girls with Performance IQ's. These  $r$  values ranged from  $+.31$  to  $+.38$ .

In terms of the secondary study, data analysis revealed statistically significant correlations between five of the six Factor Scales with the three measures of intelligence. Interestingly, Factor III (Physical Appearance and Attributes) did not appear to be related to intelligence. However, as shown in Table 42, correlations between cluster scores for the remaining five Factor Scales were statistically significant for the following subgroups:

Factor I (Behavior): The mainstream group evinced a low positive relationship with Full-Scale IQ's and a somewhat modest positive relationship with Verbal IQ's. Similarly, the fifth grade subjects also showed a low positive relationship, but statistical significance was restricted to the Verbal Scale. These correlations ranged from  $+.31$  to  $+.40$ .

Factor II (Intellectual and School Status): This particular Factor correlated more highly and consistently with intelligence than all other variables. As can be seen in Table 42, the mainstream program as well as all girls from both programs achieved statistically significant correlations with all three intelligence scales. In contrast, significant correlations were



also noted for both educational programs and fifth grade subjects with Full-Scale and Verbal measures, with the former group correlating more highly with intelligence than the latter group. The third and fourth graders, however, achieved significance on only the Verbal Scale. These correlations were low, with third graders achieving a positive relationship and fourth graders achieving a negative relationship. These correlations ranged from  $+.21$  to  $+.50$ , and  $-.34$ .

Factor III (Physical Appearance and Attributes):

No significant correlations were noted.

Factor IV (Anxiety): On this Factor, fifth grade subjects achieved statistically significant correlations with Full-Scale IQ's and Verbal Scale IQ's. These correlations were both  $+.31$ .

Factor V (Popularity): On this Factor, only the fifth grade subjects achieved a significant correlation with the Full-Scale IQ's. This correlation was  $+.33$ .

Factor VI (Happiness and Satisfaction): As shown in Table 42, the mainstream program achieved

significant correlations with all three intelligence measures. These correlations ranged from  $+ .31$  to  $+ .36$ .

While the data of the foregoing analyses revealed some low-to-somewhat-modest positive relationships between self-concept and intelligence, the magnitude of the relationships for the most part were found to be weak. That is, of the 168 correlations performed, only twenty-seven (or 16%) were statistically significant (seventeen at the .05 level and ten at the .01 level). As indicated by this study, significant correlations between the Spanish P-HCSCS and the Spanish WISC ranged from  $+ .21$  for both programs with Full-Scale IQ's, to a modest positive correlation of  $+ .50$  for fifth grade subjects with Verbal IQ's. In contrast, there was a low significant negative correlation ( $- .34$ ) for the fourth grade subjects between cluster scores for Factor II (Intellectual and School Status) with Verbal IQ's. This unexpected finding indicated an inverse relationship between these two variables.

Conversely, additional analyses found that correlations between the self-concept and intelligence were weakest and nonsignificant for the bilingual group and for all boys of both programs. Interestingly, examination of these data showed a substantial decrease in the magnitude of  $r$ 's and tends to suggest that for the bilingual program, and for

all boys of both programs, there was no relationship. In contrast, further examination of Table 42 revealed that for all girls of both programs, the self-concept was strongly associated with intelligence (Full-Scale and Performance Scales as well as for all three intelligence scales from cluster scores from Factor II). This finding strongly supports the notion that girls, but not boys, are fairly realistic in their self-appraisals of their intellectual ability.

As for the major purpose of the study, these results suggest quite clearly that children in the bilingual program and boys from both programs demonstrated lower relationships than children in the mainstream program and all girls from both programs. These findings raise many questions such as whether girls are perhaps psychologically, intellectually, and socially more mature than boys at this age; whether the lack of bilingual male teachers in the bilingual elementary grades contributes to differential performance between the sexes; or whether other factors, yet unrecognized, account for these findings. However, whatever the direction of the relationship, the link between self-concept and intelligence is pedagogically and psychologically important.

In sum, then, the correlational data set forth in this exploratory descriptive study was designed specifically to examine the relationship between the Spanish version of the

P-HCSCS and the Spanish WISC for monolingual and bilingual children. To the writer's best knowledge, these findings represent perhaps the only correlational data extrapolated from the P-HCSCS and the Spanish WISC that bear on the reciprocity of the affective and cognitive domains between Puerto Rican monolingual and bilingual children.

Finally, it seems evident that if the data analysis of this exploratory study can be replicated using a much larger sample, the Spanish version of the P-HCSCS may prove useful as an effective screening instrument in bilingual/bicultural education. Such refinement (concurrent validation) awaits further study by bilingual educators, and bilingual school psychologists in particular, who are presently concerned about the bilingual "self" upon cognitive performance.



Table 42  
Summary of Significant Product-Moment Correlations

Spanish Version of the P-HCSCS	Measures of Intelligence Spanish WISC		
	Full-Scale	Verbal	Performance
Self-concept	Mainstream Program*	Mainstream Program**	
Total Score	Grade 5*	Grade 5*	
	All Girls*		All Girls*
Factor Scales			
I Behavior	Mainstream Program*	Mainstream Program** Grade 5*	
II Intellectual and School Status	Both Programs*	Both Programs**	
	Mainstream Program**	Mainstream Program** Grade 3* Grade 4* Grade 5**	Mainstream Program*
	Grade 5**	Grade 5**	
	All Girls*	All Girls*	All Girls*
III Physical Appearance and Attributes			
IV Anxiety	Grade 5*	Grade 5*	
V Popularity	Grade 5*		
VI Happiness and Satisfaction	Mainstream Program**	Mainstream Program**	Mainstream Program*
*p < .05	Note: Both Educational Programs (N=120)		
**p < .01			
	Both Educational Programs		(N= 60)
	Bilingual Program		(N= 60)
	Mainstream Program		(N= 40)
	Grade Three		(N= 40)
	Grade Four		(N= 40)
	Grade Five		(N= 60)
	All Boys (both programs)		(N= 60)
	All Girls (both programs)		(N= 60)

## CHAPTER V

### SUMMARY, IMPLICATIONS, AND RECOMMENDATIONS

This final chapter will be presented in three major sections. The first section will provide a brief review of the limitations to this study as well as the original purpose and related questions. The second section will summarize the major findings of the study. This will be followed by conclusions in relation to previous research, and implications will be noted. In the third and final section, recommendations for future research are made.

#### Limitations Reviewed

This two-fold study is limited in several ways. First, with respect to external validity, the findings can only be generalized to Puerto Rican children. As such, this limitation both strengthens and weakens the findings.

Secondly, since the test literature which accompanies the P-HCSCS makes no normative reference with respect to the self-concepts of Hispanic Puerto Rican children, the results reported here have no "real" basis for comparison. Though several Spanish versions exist, none were reported for this particular subgroup. Thus, these results must be interpreted with caution, and generalizations to other Spanish-speaking subgroups should be avoided.

Thirdly, these comparative findings must be tempered somewhat by the relatively small size of the sample, and by

the fact that the participants represented only six schools within a large, multifaceted school system. The fact that this exploratory study was of an ex post facto design should also be recognized.

Fourthly, in the correlational studies at least, the reader should use caution in interpreting these results. That is, correlation coefficients run on samples of this size may prove unstable, and thus, may render the findings questionable. In addition, since a relatively large number of t-tests were performed, there is a greater probability of Type I errors.

Finally, and perhaps more importantly, a study such as this, while attempting to assess Spanish-speaking children, must also address itself to many inherent problems, such as the technical adequacy of the instruments, the nature of the population studied, and the complex effects of bilingualism. Each of these factors, while considered and controlled for as well as possible, may still exert some unknown variance on the results of this study. Nevertheless, as with any new research that attempts to chart new areas, this investigator is constrained to a rather high level of theory, conjecture, and speculation, some of which it is hoped will provide a challenge to additional investigators for future research.

#### Purpose and Questions Reviewed

The major purpose of this investigation was to comparatively examine, in greater detail than has previously been



done, both the self-concepts and WISC patterns among a Hispanic subgroup that has largely been ignored by empirical researchers, namely, Puerto Rican children.

In a narrower perspective, this interdisciplinary study (exploratory and descriptive in nature) was divided into two major studies as follows:

Study I: The primary goal of this investigation (the foci of the study) was to modify into the Spanish language an effective, reliable self-concept instrument, namely, the Piers-Harris Children's Self-concept Scale (P-HCSCS), for use in assessing the self-concepts of Puerto Rican children in bilingual education programs. Again, since there are no standardized affective measures readily available for this particular ethnic group, the primary purpose of this study was four-fold: (1) to develop an objective self-concept instrument in the vernacular of this particular Spanish-speaking subgroup; (2) to provide an affective instrument to facilitate the assessment-diagnostic process with respect to those children for whom such intervention may be needed; (3) to provide descriptive and normative data on the instrument for samples of monolingual and bilingual children; and (4) to help fill a badly needed instrumental gap in the current state-of-the-art of BBE.

Study II: The secondary goal of this investigation (the second most significant foci of the study), simply put, was to ascertain whether statistical significant differences



existed between monolingual and bilingual children, boys and girls, and educational settings (bilingual vs. mainstream) against the tests/instruments cited. In more specific terms, utilizing the Spanish version of the Wechsler Intelligence Scale for Children (WISC) and the Spanish modified version of the Piers-Harris Children's Self Concept Scale (P-HCSCS) the major goals of this study were three-fold: (1) to obtain comparative, descriptive data on the self-concepts and intelligence test measures between monolingual and bilingual children, and (2) to examine in-depth the interrelationships between these two dependent variables. More specifically, the three major analyses needed to fully explore the purpose of this study may be further described as follows:

First, the intelligence study represented an attempt to replicate an earlier study by Altus (1953) (an investigation that explored the WISC patterns between bilingual children of Mexican-descent and their monolingual non-Mexican peers) and to apply this methodological design to study the Spanish WISC patterns of Puerto Rican children. The primary purpose of this study was to comparatively examine, in greater detail than has previously been done, the profile patterns between monolingual and bilingual children. The research objectives were: (1) to replicate and extend the previous study of Altus (1953) by incorporating children from a different Hispanic subgroup; (2) to determine whether or not

differences would be found among any of the Spanish WISC intelligence test measures (Full-Scale, Verbal, and Performance IQ's, as well as the ten required subtests) between monolingual and bilingual children; (3) to determine whether or not differences would be found among any of the basic descriptive variables (such as, sex, grades, and programs) on the measures previously cited; and (4) to provide in-depth intelligence data for Puerto Rican children for whom research with respect to profile patterning has been, and still is, nonexistent.

Second, the affective study (which employed the same research strategies as the intelligence study) represented an attempt to study in-depth the self-concepts between and within these two specific subgroups. In brief, the goals of this study were three-fold: (1) to replicate and extend the previous study of Altus (1953) by incorporating a second major variable, namely, self-concept; (2) to investigate and compare monolingual and bilingual children's responses to the Spanish modified version of the P-HCSCS; and (3) to provide descriptive normative data (separately by sex, grades, and programs) for this particular Hispanic subgroup for whom bilingual research on the P-HCSCS has been, and still is, conspicuously absent.

Third, the final study (based on the two aforementioned data sets) sought to probe the relationships between these two dependent variables. That is, this study was undertaken

with two related objectives: (1) to examine the correlations between self-concept and intelligence, and (2) to examine the concurrent validity of the P-HCSCS, using the Spanish WISC as the criterion.

The major purpose of this study, then, was to examine the self-concepts and WISC patterns between Puerto Rican monolingual children taught in a bilingual program and bilingual children taught in a mainstream program. The questions asked of the data were:

1. What cognitive differences would these children demonstrate in regard to the Full-Scale, Verbal, and Performance IQ's, as measured on the Spanish WISC?
2. What cognitive differences would these children demonstrate in regard to subtest analyses, when examined separately by sex and programs?
3. What affective differences could we find in regard to the total positive self-concept scores between groups when matched for sex and grades, as measured on the Spanish modified version of the P-HCSCS?
4. Will there be significant differences among the cluster scores of the six separate Factor Scales of the P-HCSCS between monolingual and bilingual children when they are grouped according to any combination of sex and programs?
5. Will there be significant relationships between the total positive self-concept scores and the three intelligence quotients between and within these two subgroups? Further, will significant relationships exist between the cluster scores of the six separate Factor Scales of the P-HCSCS and the three aforementioned intelligence measures?



## Summary of Major Findings

The major findings of this exploratory study revealed some interesting psychometric data that are worth reviewing. It is anticipated that these outcomes will have significant implications for bilingual school psychologists, clinicians, and others involved in bilingual education. The following summary highlights these findings.

### The Intelligence Study

The first study was designed to explore the Full-Scale, Verbal, and Performance IQ's of the Spanish WISC between the independent variables of sex, grades, and programs. These analyses indicated that there were consistently significant differences between the two programs and among the three grades. Inspection of these data indicated significant differences between programs for grade four on the Full-Scale, Verbal, and Performance IQ's, and between programs for grade five on the Full-Scale and Verbal IQ's. Moreover, in all analyses for possible sex differences, the F's were nonsignificant.

The major findings of this study indicated that bilingual children differed significantly from monolingual children on Full-Scale, Verbal, and Performance IQ's, with the former group achieving higher scores on all three intelligence measures. Noteworthy in this study is also the finding that significance was found on all three



intelligence measures between programs for the total sample of only girls. These differences were in favor of the bilingual girls. In regard to the Full-Scale IQ, the bilingual girls showed a higher mean score (101.43) than the bilingual boys (99.60). However, just the opposite was true for the monolingual group; boys showed a higher mean score (93.30) than girls (90.33). Specifically, the mean Full-Scale IQ scores found between the two groups of monolingual and bilingual children were 91.82 and 100.52, respectively.

In addition to analyzing the Full-Scale, Verbal, and Performance IQ's, group comparisons were also made on each of the ten required subtests. Subtest patterning showed significant differences between the two groups, with the most striking discrepancies on Information, Comprehension, Arithmetic, Similarities, Picture Arrangement, Block Design, and Object Assembly, in that order. There were no significant differences on Vocabulary, Picture Arrangement, and Coding. This was also true for all girls of both programs. For all boys of both programs, significant differences were found between the mean subtest scores on Comprehension and Similarities. Findings from this study revealed significant differences between subtest scores for each sex, with girls exhibiting more difficulty with the Verbal Scale than boys. Interestingly, these findings support Wechsler's (1958) contention that among tasks which tap intellectual ability, some are easier or more difficult for males and/or females.

### The Self-Concept Study

Results of this study showed that the self-concept did not differ significantly between monolingual and bilingual children. Of equal significance, there were nonsignificant sex differences when the self-concept was studied between and within the sexes. These findings strongly suggest that monolingual children taught in the bilingual settings have at least the same, if not higher, feelings of self-concept as do their bilingual counterparts taught in the mainstream settings.

Along with this research, group comparisons were also made on cluster scores from the six separate Factor Scales. In comparing the various dimensions of self-concept between these two groups using t-tests, significant differences were found between fourth grade subjects on Factors I (Behavior) and II (Intellectual and School Status), between the sexes in the bilingual program on Factor IV (Anxiety), between the sexes in the mainstream program on Factor I, and between all boys of both programs on Factor I. Despite these findings, there were no significant differences found between the two subgroups, third graders, fourth graders, or girls of both programs. In regard to these findings, however, it must be stressed that in the absence of normative data for cluster scores (Piers, 1969), any conclusions drawn from this study are, at best, tenuous. This is particularly true in regard to Hispanic Puerto Rican children, who may demonstrate very

different performance patterns from their Anglo-American counterparts.

### Relationships

As a guide in examining the results of this study, two sets of Pearson product-moment correlations were calculated: one set based on the total positive self-concept scores and the three intelligence quotients, and the other, using the cluster scores from the Factor Scales. Highlights of the main findings of this study were as follows:

Correlations between the Spanish modified version of the P-HCSCS and the three IQ scales of the Spanish WISC revealed that 6 of the 24  $r$ 's between the total positive self-concept scores and the three intelligent measures were significant, with a range of  $+0.31$  to  $+0.38$ . As shown by asterisks (used to delineate significance) in Table 42, inspection of these data revealed low-to-somewhat-modest positive relationships among bilingual children, fifth graders, and all girls with Full-Scale IQ's, among bilingual children and fifth graders with Verbal Scale IQ's, and among all girls with Performance Scale IQ's.

Similarly, correlations between the cluster scores and the three intelligence measures revealed that 18 of the 144  $r$ 's were significant, with a range of  $+0.21$  to  $+0.50$ . As can be seen in Table 42, the results of this study suggest that Factor II (Intellectual and School Status) correlated more highly with IQ than any other factor. These studies, while



admittedly very tentative, lend considerable support to the hypothesis that self-concept is more highly correlated with intelligence in girls than in boys.

### Conclusions and Related Research

This study, conducted with a Puerto Rican population, expands and confirms our knowledge about the affective and cognitive characteristics between monolingual and bilingual children. The major conclusions are as follows:

1. Bilingual children scored significantly higher on the Escala de Inteligencia Wechsler para Niños than their monolingual counterparts from similar socioeconomic backgrounds.
2. Bilingual children achieved higher mean scores on the Full-Scale, Verbal, and Performance measures than their monolingual counterparts.
3. There were no statistically significant differences between the sexes in regard to Full-Scale IQ's, Verbal Scale IQ's, or Performance Scale IQ's.
4. Scatter analysis showed significant differences between subtest scores for each sex, with girls exhibiting more difficulty on the Verbal Scale than boys. In addition, both sexes found Picture Completion and Coding easier than Comprehension.
5. Bilingual children obtained significantly higher mean scores on Information, Comprehension, Arithmetic, Similarities, Picture Arrangement, Block Design, and Object Assembly than did monolingual children.
6. There was no statistically significant difference between the bilingual and monolingual groups, as measured by the Spanish modified version of the Piers-Harris Children's Self-Concept Scale.
7. The self-concept is not affected significantly by such variables as sex, grades three through five, school experience, or maturity.



8. The degree of correlation between the Spanish WISC and the Spanish P-HCSCS was minor ( $r=.12$ ).
9. Significant positive relationships were found between the total positive self-concept scores and the three intelligence scales for bilingual children and fifth graders with Full-Scale and Verbal Scale IQ's, and all girls with Full-Scale and Performance Scale IQ's. Significant relationships for the total sample, third and fourth graders, and all boys were not detected.
10. Significant positive relationships were found among five of the six separate Factor Scales, with Factor II (Intellectual and School Status) correlating more highly with intelligence than any other Factor Scale.
11. Significant positive relationships were found between Factor II and the three intelligence quotients for the total sample, bilingual children, grades three through five, and all girls. Significant relationships for monolingual children and all boys were not detected.

Findings from the intelligence study provide strong support for those reported by Darcy (1952), Galvan (1967), Bransford (1966), and Oplesch and Genshaft (1981), who found significant differences between the Verbal and Performance Scale scores for monolingual and bilingual children. This study confirms their findings not only for the Verbal and Performance Scale scores, but also for the Full-Scale score.

Kaufman's (1976) findings in regard to subtest scatter are substantiated by the data in this study. Kaufman found that by focusing on extreme scatter or fluctuations in the WISC-R profile, such as one or more deviate subtest scores, there may be diagnostic and remedial implications. This study strongly supports this position in that monolingual

children scored significantly lower than bilingual children on seven of the ten required subtests. Specifically, this study found that the monolingual group performed relatively poorly on three of the four ACID subtests (Digit Span was not administered). This cluster, often referred to as the ACID cluster, has been found to be extremely useful in the diagnostic assessment of learning disabled children (Rugel, 1974; Lutey, 1977; Vance and Singer, 1979; Kaufman, 1979). This study also confirms previous findings that indicate the Verbal versus Performance dichotomy is not a practical diagnostic index for discriminating groups of educationally high-risk children (Bannatyne, 1974; Milich and Loney, 1979; Ribner and Kahn, 1981; Hartlage, 1982; and Searls, 1985).

These results support the findings of Gilbert (1969), Matarazzo (1972), and Vance (1979), who found significant subtest score differences between male and female subjects. Findings from this study are in congruence with Vance who found that both sexes tended to find the Verbal Scale more difficult than the Performance Scale. These findings also supported Vance in terms of females having more difficulty on the Verbal Scale than their male counterparts. Unlike the study of Vance, this study does not suggest that both sexes performed better on Arithmetic, Comprehension, and Picture Arrangement, than on Information and Similarities. This investigator found that both sexes performed better on Vocabulary, Picture Arrangement, and Coding, than on

Comprehension and Similarities. The degree to which these groups differentiated was a central question of the study.

These findings indicated that monolingual children had more difficulty with the Spanish WISC subtests than their bilingual counterparts. Peal and Lambert's (1976) work on bilingualism as it relates to intellectual functioning yielded similar results with bilingual children performing better than monolingual children on verbal and nonverbal intelligence tests. Pertinent to the present study, Peal and Lambert found that bilingual children appeared to have a more diversified set of mental abilities than monolingual children. They found that bilingual children had several advantages: (1) a language asset, (2) greater cognitive flexibility, and (3) a greater ability in concept formation than their monolingual peers.

These results are similar to those reported by Kaufman (1979), who found that Spanish-speaking bilingual children who learn English as a second language are likely to score higher on the Performance Scale than on the Verbal Scale. Support is found, as well, for the proposition that bilingual children score relatively higher on nonverbal than verbal measures of mental ability.

Findings from this study differ from those reported by Altus (1953), who compared the intelligence test patterns of a group of Mexican-descent bilingual children to that of a matched group of English-speaking children. Evidence from



her study indicated differences on all three IQ scales that favored the monolingual group of children. However, in the present study, just the opposite was found to be true. The difference in findings may be contributed to the fact that two different samples of children were studied. Altus' sample was a heterogeneous population, while the sample in the present study is a homogeneous group, representative of a Spanish-speaking population of the "same" ethnicity.

Findings from the self-concept study does not support Greene and Zirkel's (1971) work where it was found that the self-concept was not related to IQ. Findings from this study found significant relationships between self-concept and IQ, and provides empirical evidence of its application in this context. Moreover, these findings support Comas-Diaz, Arroyo, and Lovelace's (1982) argument for enhancing the self-concepts of mainland Puerto Rican children.

This study agreed substantially with previous research on self-concept. Purkey (1970) found substantial evidence that clearly shows a persistent and significant relationship between the self-concept and academic performance. These findings strongly support this theory in that more significant correlations were found between Factor II (Intellectual and School Status) and the three intelligence quotients than on any other Factor Scale. These findings further indicated that this relationship appears much stronger for girls, than for boys.



The results of this study strongly support the previous research of Albright (1974) which indicated that Mexican-American monolingual children did not differ significantly from bilingual children in terms of self-concept. Similar results were found in this study with Puerto Rican children.

Chang (1976) found that sex and grade level variables were not part of the child's or teacher's reference point when rating self-concept. This research corroborates this position in that no significant differences were found between the grades or between the sexes. The lack of interaction for the variable of sex in this study strongly substantiates previous research.

This study provides substantial support for the work of Eastman (1965) which indicated significant correlations between self-concept and intelligence. This researcher found almost identical results in terms of the Full-Scale, Verbal, and Performance IQ's, as well as for the cluster scores for Factor II (Intellectual and School Status).

This study partially conflicted with Piers' (1965) work where sex differences were found on two factors, with boys rating themselves significantly lower on the Behavior and Anxiety Factors than did girls. This study found that bilingual boys rated themselves significantly lower on Behavior than did bilingual girls, but just the reverse was found for Anxiety. On this factor, monolingual girls rated themselves significantly lower than monolingual boys.

## Implications for Bilingual Education

The implications of these findings for both bilingual educators and bilingual school psychologists are manifold. The three major areas that appear to be most important are specifically stressed. These are: (1) intelligence, (2) self-concept, and (3) instrumentation.

In the area of intelligence, the findings of this study has serious implications for the education of Puerto Rican children. Specifically, the aim of this study was to determine for a sample of Puerto Rican monolingual and bilingual children, (1) the differences between the Spanish WISC's Full-Scale, Verbal, and Performance IQ's, (2) the differences between scaled scores on the ten required subtests, and (3) the relative degree of scatter in the children's profiles. Such an approach is compatible with the strategies suggested by Kaufman (1979), Hartlage (1981), Lutey (1982), and Ogdon (1982), Searls (1985), who feel that WISC subtests should be investigated in terms of their relationship to the learning process; that is, in examining the strengths and weaknesses in a child's learning spectrum.

These results have several implications. First, this study has determined that there are significant differences in the intelligence test scores between Puerto Rican monolingual and bilingual children. As found in this study, there were consistently significant differences on the

Spanish WISC's Full-Scale, Verbal, and Performance IQ's, which favored the bilingual children. Further, both groups performed better on the Performance Scale than on the Verbal Scale, and again, both intelligence measures favored the bilingual children. These results need to be explored further, since this was an unexpected finding of the study.

Secondly, in regard to subtest scatter, it was shown that bilingual children achieved significantly higher mean scores on Information, Comprehension, Arithmetic, Picture Arrangement, Similarities, Block Design, and Object Assembly than their monolingual peers. There were no significant differences between subtest scores on Vocabulary, Picture Completion, and Coding.

In comparison of mean subtest scores between the sexes, this study found significant differences between mean subtest scores for each sex, with girls having more difficulty on the Verbal Scale than boys. There were seven occurrences of significance between pairs of subtest scores for girls, and only two for boys. Both sexes found Picture Completion and Coding easier than Comprehension.

The question arises as to why the monolingual children obtained lower scores than their bilingual peers. Moreover, why did females exhibit more difficulty on the Verbal Scale than males? Thus, a basic question to be explored here is whether these discrepancies are contributed to cognitive variables, linguistic factors, or a function of situational



context. For example, these discrepancies may well reflect differences in the programs for the two groups investigated or discrepancy between what teachers label as potential and what actually occurs. Maybe teachers are able to describe the "at-risk" child and the child who will underachieve in school but are unable to predict "which" children will need special educational programming. This distinction is very important.

On the other hand, the fact that the children used in this study were at least of average intelligence and that the subtests were investigated in this particular manner, makes it difficult to find comparable studies against which to compare the present results. That is, it is difficult to arrive at any comparison with the patterning of subtest scores reported for Hispanic Puerto Rican children, as in most cases the subject groups have been Hispanic Mexican-American children. Consequently, this study may pose more questions that it can actually answer - questions that need additional in-depth study by bilingual school psychologists interested in the effects of bilingualism on intelligence.

Thirdly, a major implication of this study is that the present findings suggest that the Spanish WISC can provide valuable information concerning the cognitive strengths and weaknesses of Spanish-speaking children. These are "trends" which bilingual school psychologists should be aware of and actively investigating. The fact that the two groups of



children differed significantly on the Verbal Scale could imply that monolingual children have good spatial skills, but are weak in those skills that involve general knowledge, concept formation, and retention of arithmetical processes. More research is needed within this important area.

Lastly, these results have implications for bilingual educational programs. The most important is the suggestion that early intervention with monolingual children may be necessary to place them on a par with their bilingual peers in the cognitive and perceptual spheres of learning. At the risk of generalizing, practitioners can encourage the development of these skills through: (a) monitoring each student's individual progress as he/she progresses through the curriculum, (b) providing typical teacher-made tests that are curriculum referenced, (c) attending to individual differences, in particular, learning styles and needs of low achieving students, and (d) reinforcing the use of as many sensory modalities as possible.

It may be concluded from this study that the primary bilingual practitioner is a valuable first level screen in the identification of educationally high-risk children. A clear recommendation from the present study is that primary bilingual practitioners be involved more actively and systematically in the early identification process.

In the area of the self-concept, this exploratory study is one of the first in the field of BBE to combine

affective variables with psychological variables to probe the relationships between self-concept and intelligence with Puerto Rican children. It produced affective and cognitive profile patterns of children in bilingual and mainstream programs; it also dispelled the commonly held myth (Carter, 1975; Betances, 1975; Seelye, 1978) that Spanish-speaking children have negative self-concepts. Results of this research have shown that:

1. There is no significant difference in the self concepts between monolingual and bilingual children.
2. The self-concept is not affected significantly by such variables as sex, grades three through five, school experience, or maturity.
3. Significant relationships were found between the total positive self-concept scores and the three intelligence scales for bilingual children and fifth graders with Full-Scale and Verbal Scale IQ's, and all girls with Full-Scale and Performance Scale IQ's. Significant relationships for the total sample, third and fourth graders, and all boys were not detected.
4. Significant relationships were found among five of the six separate Factor Scales, with Factor II (Intellectual and School Status) correlating more highly with intelligence than any other Factor Scale.
5. Significant relationships were found between Factor II and the three intelligence scales for the total sample, bilingual children, grades three and five, and all girls. Significant relationships for monolingual children or all boys were not detected.

These results have several implications. First as this was a field study, further work is needed with greater controls over such variables as language skill proficiency, test instruments, and socio-environmental factors. With

such controls, the nature of the relationships between the self-concept and intelligence can be assessed with greater precision.

Secondly, this study determined that the self-concepts of monolingual children did not differ significantly from that of their bilingual peers. A more surprising finding is that no significant differences were found between the sexes or in grade levels. Interestingly, in this study, the mean total positive self-concept scores for the two groups of monolingual and bilingual children were 58.78 and 59.85, respectively, which are higher but consistent with the normative sample (51.84) (Piers and Harris, 1969). Nevertheless, these results provide strong support for the experimental validity of the Spanish modified version of the P-HCSCS, and in keeping with the theoretical approach that test users should develop their own local norms.

Thirdly, as an exploratory effort toward probing the relationship between self-concept and intelligence, this study was able to demonstrate significant relationships between the Spanish modified version of the P-HCSCS and the Spanish WISC. Hopefully, there are some implications here worthy of examination in a more comprehensive study as these correlations appear to be as reliable and valid as those found by other researchers using the English version (Eastman, 1965; Piers, 1977). These findings should be of



value to future bilingual school psychologist, bilingual clinicians, and bilingual researchers who wish to pursue the questions raised by this investigation or who attempt replications of various portions of this study. To the best knowledge of this investigator (who has conducted a rather extensive, but not necessarily exhaustive research of the literature), these results represent perhaps the only correlational data bearing on the P-HCSCS and the Spanish WISC with respect to Puerto Rican children.

This study, therefore, has significant implications for bilingual counselors and classroom teachers. As reported by Combs (1962), Canfield and Wells (1976), Purkey (1970), Beane (1982), among numerous others, previous research reveals that much attention has been directed to identifying poor self-concept as an inhibiting factor in school performance. This writer feels that because there is a close reciprocal relationship between self-concept and academic performance, schools must place the development of a healthy self-concept as a top priority. This model calls for close consultation with classroom teachers on the part of the counselor. In other words, the enhancement of the self-concept must be a major agenda for counselors, and a major issue in curriculum planning.

Finally, in the area of instrumentation, this study has several implications for bilingual school psychologists. First, the results of this study not only suggests that the



investigation of the bilingual/bicultural self constitutes a worthwhile area of research, but also indicates some specific lines along which such research might proceed. Second, this study has provided the initial validation of a self-concept instrument which could be used within the bilingual setting for evaluating the affective components of Puerto Rican non-English-speaking children. Third, as this study has shown, the procedure can be taped, and hence, it provides the potential for an automated approach for testing the self-concept, especially with poor readers.

Overall, this adapted Spanish version of the P-HCSCS appears to have potential as a linguistically-appropriate self-report, screening, assessment, and research instrument for use with Puerto Rican children. Among its advantages for the bilingual practitioner are its brevity, objectivity, amendability to group administration, and the fact that it reflects content specific to a Puerto Rican population. Similarly, this instrument seems to be one of the few measures that is available for assessing affective components for remediation and for identifying high-risk children. However, as with all preliminary studies, further psychometric refinement and validity and norming studies are needed before the measure's full potential is known.

### Recommendations for Future Research

The nature of this exploratory study has facilitated the development of several ideas for future research. The following are offered as recommendations:

1. In light of the small sample size employed in this study, further research is needed to determine the adequacy of the P-HCSCS as a screening measure. A replication of this study with larger samples will be most welcome to provide much needed additional normative data.
2. This study suggests a clear need for more broad-based research examining the self concepts and Spanish WISC patterns between monolingual and bilingual children. Studies are also needed to examine not only school programs but also socioeconomic, linguistic, family environment, and other variables, to determine which of these variables account for the differences between groups among affective and cognitive dimensions.
3. Although not included as part of this study, an important point for future research, especially in connection with the scores for bilingual children, is that the Escala de Inteligencia Wechsler para Niños, while developed and translated into Spanish in Puerto Rico, still contains cultural referents that may be unfamiliar to Puerto Rican children who are "born" on the "mainland" and attend school in the United States. Technical refinements such as better norms, revision of certain items, reliability studies, etc., are, of course, mandatory. However, these approaches remain the most effective existing means for gathering this type of information.

4. The lower Spanish WISC Verbal subtest scores found for monolingual children is definitely an area worthy of further research. This sample performed less well on three of the four ACID subtests and this intriguing finding has very sound research potential. Is it possible that bilingual children have higher reading and/or cognitive skills than monolingual children?
5. Profile analyses showed significant differences between subtest scores for each sex, with girls exhibiting more difficulty on the Verbal Scale than boys. The fact that sex differences exist raises many questions that the current research cannot begin to answer, but certainly suggests further study, especially among Puerto Rican children.
6. Why did both sexes find the Verbal Scale more difficult than the Performance Scale? Why is the pattern of subtest scores significantly different between monolingual and bilingual girls? Why do all subtest scores favor the bilingual girls, particularly Arithmetic and Block Design? These same-sex subtest score differences between monolingual and bilingual girls remain a topic for future research.
7. The findings of the intelligence study are interesting enough to suggest that the issue of bilingualism as it relates to intelligence warrants further study. It would be necessary, first, to replicate the results of this study, and second, to determine if whether these subtest findings are related to external criteria. It is the writer's hope that future bilingual research will help resolve these questions.
8. These data support the observation that primary teachers can be a valuable first level screen, both cognitively and affectively, in the early identification of high-risk children. Thus, a clear recommendation from the present study is that primary teachers be involved more actively and systematically in the early identification process.



9. The similarities in the self-concepts between monolingual and bilingual children were most interesting, and, if these scores withstand replication, they would carry significant implications for the bilingual practitioner and school psychologist. Obviously, if bilingual educators are interested in assessing the self-perceptions of non-English-speaking children, additional and more definitive information in these areas must be ascertained. There is a great need for a follow-up study in this area.
10. The lack of relationships between self-concept and intelligence regarding all-boy groups and monolingual children are disturbing and truly worthy of further research.
11. Why are the patterns of correlations between the sexes one direction for all-girl groups and the opposite or none for all-boy groups? Why are the correlations for all-boy groups weaker and less pervasive than are those of all-girl groups?
12. The marked difference in correlations between monolingual and bilingual children definitely has sound potential for further research.
13. In the context of BBE, one area that needs to be explored is that of self-concept. Two other recommendations are more challenging: (a) the establishment of norms applicable to the Puerto Rican population, and (b) an intensive research effort with a primary focus on the reliability and validity of the Spanish modified version of the P-HCSCS. The latter recommendation may lead to the use of the Spanish P-HCSCS as a cultural fair instrument of genuine value. Such research awaits a more comprehensive study of the Puerto Rican population's performance on the P-HCSCS.



APPENDIX A

Cover Page for the  
Escala de Inteligencia Wechsler para Niños



ESCALA DE INTELIGENCIA WECHSLER PARA NIÑOS  
HOJA DE ANOTACIONES

NOMBRE \_\_\_\_\_ SEXO \_\_\_\_\_  
DIRECCION \_\_\_\_\_  
NOMBRE DEL PADRE  
O ENCARGADO \_\_\_\_\_  
ESCUELA \_\_\_\_\_ GRADO \_\_\_\_\_  
REFERIDO POR \_\_\_\_\_

PRUEBAS VERBALES	Valo- ración	Valoración en Escala
Información	_____	_____
Comprensión	_____	_____
Aritmética	_____	_____
Analogías	_____	_____
Vocabulario	_____	_____
(Retención de Dígitos)	_____	_____
Suma de Pruebas Verbales	_____	_____

PRUEBAS DE EJECUCION		
Figuras incompletas	_____	_____
Ordenación de Dibujos	_____	_____
Diseños con Bloques	_____	_____
Composición de Objetos	_____	_____
Claves	_____	_____
Laberintos	_____	_____
Suma de Pruebas de Ejecución	_____	_____

	Año	Mes	Día	Valoración en Escala	C.I.
Fecha de examen	_____	_____	_____	Escale Verbal _____*	_____
Fecha de Nacimiento	_____	_____	_____	Escale de Ejecución _____*	_____
Edad	_____	_____	_____	Escale Total _____	_____

\*Prorrateado si es necesario

OBSERVACIONES

Examinador

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permiso especial del autor y de  
"The Psychological Corporation",  
Nueva York, N.Y.

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77-12445 9-989880

APPENDIX B

Cover Pages for the  
Piers-Harris Children's Self Concept Scale

# THE PIERS - HARRIS CHILDREN'S SELF CONCEPT SCALE

*(The Way I Feel About Myself)*

by

ELLEN V. PIERS, Ph.D.

and

DALE B. HARRIS, Ph.D.

*Published by*

Counselor Recordings and Tests

BOX 6184 ACKLEN STATION

NASHVILLE, TENNESSEE 37212



LA ESCALA PIERS-HARRIS DE AUTOCONCEPTO PARA NIÑOS  
(Lo que pienso sobre mi mismo)

By

Ellen V. Piers, Ph.D., and Dale Harris, Ph.D.

Nombre.....	Fecha.....
Edad.....	Niño o Niña.....
Grado.....	Escuela.....

Traducida y Adaptada del Español  
con Permiso Especial del  
Counselor Recordings and Tests  
Nashville, Tennessee

Traducido al Español

por

Robert Barcome

1981

## APPENDIX C

### Participant Consent Forms



THE PUBLIC SCHOOLS of SPRINGFIELD, MASSACHUSETTS

PERMISSION FOR PARTICIPATION

To parents of Spanish speaking third, fourth and fifth grade students attending a Springfield public elementary school:

A study is being conducted in the above classes to learn more about school achievement and academic success. I believe this to be an extremely valuable study in that it will yield useful and insightful information in the identification of bilingual children with learning problems. Therefore, his/her participation could play an important part in the decision making process of this research study.

Your child will receive two tests administered in the school which will take approximately one and one half hours to complete. The student will not have to study for these tests and there will be no inconvenience to you. I am most anxious that you sign and return this letter before December 22, 1980, so that the testing can begin as soon as possible.

May I mention that the results of the testing will be confidential, and at no time will the results be used to make decisions about the student's education. A code number will be used to facilitate the follow-up techniques, and at no time will the testing data be identified by respondent. Moreover, you may withdraw your child from the research project at any time at your discretion.

If you have any questions about the study, please call me at 787-7049. I appreciate your time and consideration and look forward to receiving your permission for your child's participation.

Sincerely,

*Robert Barcome*

Robert Barcome  
School Psychologist

\_\_\_\_\_ has my permission to participate.

(Student's name)

\_\_\_\_\_  
(Parent or guardian signature)

\_\_\_\_\_  
(Address)

\_\_\_\_\_  
(Phone number)



THE PUBLIC SCHOOLS of SPRINGFIELD, MASSACHUSETTS

PERMISO DE PARTICIPACION EN PROYECTO

A los padres de estudiantes hispanos en los grados tercero, cuarto y quinto que asisten a las escuelas elementales públicas de Springfield:

Se está llevando a cabo un estudio entre los estudiantes en los grados tercero, cuarto y quinto con el propósito de conocer más sobre su aprovechamiento escolar y éxito académico. Creo que los resultados de este estudio serán valiosos y útiles en la identificación de niños bilingües con problemas de aprendizaje. Por lo tanto, la participación de su niño desempeñará una parte importante al momento de tomar decisiones en esta investigación.

A su niño se le administrarán dos pruebas en la escuela. Estas tomarán entre una hora u hora y media. El estudiante no tiene que estudiar para tomar estas pruebas y no habrá ningún otro inconveniente para usted. Estoy muy interesado en recibir su autorización debidamente firmada antes del 22 de diciembre de 1980, para así poder comenzar a administrar las pruebas lo más pronto posible.

Los resultados de estas pruebas serán confidenciales y éstos no se usarán para tomar decisiones sobre la labor escolar del estudiante. Para asegurar la confidencialidad de los participantes, se le asignará un número que solamente se usará durante el proceso técnico ya que en ningún momento se sabrá el nombre del participante. Por otra parte queda entendido que usted puede dar de baja a su niño de este proyecto si lo considera necesario.

Si tiene alguna pregunta sobre este estudio, por favor llámeme al teléfono 787-7049. Su tiempo y consideración serán apreciados. Espero recibir la autorización de participación de su niño en el proyecto, lo más pronto posible.

Sinceramente,

*Robert Barcome*

Robert Barcome  
Psicólogo Escolar

tiene mi permiso para participar.

\_\_\_\_\_  
(Nombre del estudiante)

\_\_\_\_\_  
(firma del padre o encargado)

\_\_\_\_\_  
(dirección y número de teléfono)



## APPENDIX D

Letter of Permission to Use the P-HCSCS

## COUNSELOR RECORDINGS AND TESTS

Box 6184 • Acklen Station  
Nashville, Tennessee 37212

August 7, 1981

Mr. Robert Barcome  
c/o Psychology Department  
Springfield Public School System  
195 State Street  
Springfield, MA 01103

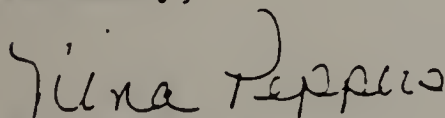
RE: Piers-Harris Children's Self-Concept Scale

Dear Mr. Barcome:

In reply to your letter of December 12, 1980, you have our permission to translate and use a Spanish version for your research project, and you may include the sample in your dissertation.

We would appreciate receiving a copy of the test for our files.

Sincerely,



Nina Peppers  
Executive Secretary

np

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